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# Early Childhood Investments and Women's Work Outcomes across the Life Course

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**Abstract:** This study investigates variability in women's experiences balancing work and family, focusing on the association between early childhood investments and work trajectories. Using longitudinal data and event study models, we examine work participation from two years before to 10 years after first birth across different early childhood investment levels. Although sustained intensive investment is associated with the largest reduction in paid work, the relationship between child investment and work outcomes does not follow a simple "more investment, less work" pattern. Instead, investment intensity and duration both shape work trajectories. Women with more intensive short-term practices or moderate longer-term ones work at similar levels as women making lower investments. Patterns also differ by work outcome: not working is most differentiated by sustained intensive child investment, whereas hours worked are similar across a range of investment levels. Finally, women with constrained family resources consistently work more than those married to college-educated spouses.

**Keywords:** Women's employment; work-family conflict; early childhood investment; parenting practices; breastfeeding duration; early childhood reading

**Reproducibility Package:** Replication code for this article can be accessed here: <https://osf.io/j8ymw/overview>

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A robust body of research shows that childbirth causes women to leave the paid labor market (Kleven et al. 2019a). This is true both in countries with little formal paid support for maternity leave, such as the United States, and in countries with strong welfare policies supporting working mothers, such as Denmark and Sweden (Kleven et al. 2019a). This pattern is also observed for mothers whose partners are women rather than men (Machado and Jaspers 2023) and for adoptive rather than biological parents (Kleven, Landais, and Sogaard 2021). Relatedly, women's earnings fall systematically after childbirth, both in absolute terms and relative to those of their spouses, predominantly as a result of their reduced labor hours (Musick, Bea, and Gonalons-Pons 2020). The primary explanation for this robust pattern is that women leave work to care for and invest in children.

In the United States, women's departure from paid work after childbirth varies with the cost and availability of childcare (Han and Waldfogel 2001) and with formal parental leave policies (Washbrook et al. 2011). Qualitative research also highlights the important role that cultural norms of mothering and paid employment play in women's work decisions (Hays 1996). Because ideal worker and mother norms are both characterized by devotional schemas (Blair-Loy 2003), women can feel torn between wanting to be a devoted worker and a devoted mother (Stone 2008). Yet few studies examine how early childhood investments and the intensity of these

investments are associated with women's labor market participation across the life course. Although all children require considerable care, women differ substantially in the types of early childhood investments they make. Thus, women may trade off paid work for more intensive child investments, depending on the resources and family structures that enable them to make these investments. Addressing this gap is important because it highlights an understudied dimension of women's work decisions after childbearing—the intensity of early childhood investments—and helps illuminate a potential source of gender inequality both in paid work and within the family.

In this study, we ask: How do women's labor market participation (whether they work for pay) and their short- and long-run employment trajectories (hours worked, conditional on working) differ by the intensity of their early childhood investments? How much do the patterns differ by family resources? Our study systematically investigates taken-for-granted assumptions about the homogeneity of women's experiences in balancing work and family. These research questions focus on an important nexus of inequality—the intersection of gender, resources, and child investment—and the investments and constraints that shape women's employment outcomes. To answer these questions, we use detailed longitudinal data and event study models to examine women's work trajectories from two years before first birth to 10 years after first birth. We operationalize early childhood investment intensity and duration using breastfeeding duration and daily reading to children at ages 3–5. We analyze how women's work trajectories differ by mothers' early childhood investment practices and their family resources using a statistical method that accounts for women's underlying unobserved preferences for work and child investment.

Our results show that the association between early childhood investments and women's work outcomes does not follow a simple “more investment, less work” pattern. Early childhood investments that are more intensive and practiced for longer durations are associated with higher predicted probabilities of not working and larger, more sustained reductions in hours worked, with meaningful differences emerging by about three months after first birth and persisting well into childhood. However, the results also reveal substantial variability in when gaps emerge and how large they are across investment levels and durations, including notable exceptions in which higher investment is not associated with greater labor market withdrawal. The results also differ by work outcome: not working is most differentiated by sustained intensive child investment, whereas hours worked (conditional on working) are similar across a wider range of investment levels. These associations also vary by family resources and structure: women with more constrained resources consistently work more than women married to college-educated spouses.

## Allocating Time between Paid Work and Child Investment

Throughout, we distinguish childcare (care arrangements that enable parents' employment) from early childhood investments (inputs aimed at children's health, cognitive development, and later outcomes) and from parenting norms (cultural

ideals about “good” mothering and fathering). We refer to breastfeeding and reading as parenting practices and use them as proxies for early childhood investment. In this article, we treat early childhood investments as development-oriented parenting practices; for brevity, we sometimes refer to these practices as “investments.”

Young children need a substantial amount of care, and all new parents expend considerable time, energy, and resources meeting these needs. Beyond the basic care that all children require, however, parents differ in how they invest in children’s cognitive stimulation, health, and development, and parenting practices vary substantially by socioeconomic status (SES) (Kalil and Ryan 2020). For example, highly educated mothers invest more intensively in breastfeeding and children’s skills development in the first few years of life than mothers with less education (Kalil, Ryan, and Corey 2012; Li et al. 2005). Individuals also differ in their available resources for investing in early childhood development, and qualitative and experimental research suggests that one major barrier is the tension women face between taking time off to invest in children’s development and working for pay (Hays 1996; Pedulla and Thébaud 2015).

Four theoretical perspectives are proposed to explain gendered choices between child rearing and paid employment. Economic theory is gender-neutral regarding preferences, but not in terms of which partner is assumed to be better at childrearing (women) and market work (men). These assumed comparative differences by gender combined with relative potential earnings of each spouse predict that couples will specialize, typically with fathers investing in paid work and mothers investing in childrearing (Becker 1991). Economic theory allows resources and opportunity costs to inform these tradeoffs. It predicts, for example, that women with higher earnings potential will be more likely to stay in the labor force after childbearing, but women who earn less than their spouses, or whose spouses earn enough to support the family at the desired level, will be more likely to leave paid work. In the context of our research questions, it would predict that, given the same level of child investment, women with more schooling will be more likely to work for pay, and educational assortative mating will predict work outcomes, holding child investment constant.

Gender theorists argue that preferences are not gender neutral, but culturally and socially infused with messages about “good mothering” that leave women with the unattainable task of “doing it all” (Hays 1996). This framing of mothering norms is experienced both as an identity women themselves embrace and as a standard by which others judge women’s commitment to their children (Faircloth 2009). In this way, some intensive investments in early childhood, such as breastfeeding and reading to children, take on a moral dimension (Wall 2001)—meaning that they are characterized as investments that are so valuable for a growing child that a mother who forgoes the investment is not maximizing the life chances of her children. Breastmilk, for example, is called “liquid gold” by pediatricians and mothers alike. This moral view of child investment interacts with the otherwise practical trade-offs women need to make in balancing work and family investments. These theories can help explain economically counter-intuitive patterns such as why highly educated women—who have the highest opportunity costs of leaving paid work—may nevertheless make the most sustained investments in early childhood.

Cultural and social class theorists add that preferences, norms, and child investment practices also differ by SES. Different social groups adhere to different ideas and practices (Bourdieu 1987; Giddens 2003), and these norms and practices can be shaped both by economic resources and different historical and racialized experiences (Dow 2016). The work–family nexus can be framed as a choice about lifestyle, one that maximizes investments in children as a way of enacting social class (Clawson and Gerstel 2014; Lareau 2003). Women may also view these investments as a strategy for maximizing their children's future social class. Child investment preferences, however, are also constrained by parents' financial and time budgets, which are strongly patterned by material and family resources (Kalil 2013; Lareau 2003). As a result, culturally based norms and preferences about the choice between paid work and child investment are both shaped and constrained by resources and family structure. These theories help explain observed variation in women's investment as they are shaped by their own resources and those of their spouses.

As the three prior types of theories suggest, women's decisions and outcomes about work and child investment are multifaceted and complex. A fourth theoretical perspective, the theory of conjunctural action (TCA), provides a framework for how preferences, opportunity costs, and resources interact over time and shape outcomes across the life course (Johnson-Hanks et al. 2011). Norms and expectations of "good mothering" (schema) interact with financial and family resources (material conditions) to shape actual behaviors that evolve dynamically over the life course (Bachrach and Morgan 2013; Johnson-Hanks et al. 2011; Rackin and Bachrach 2016). TCA offers a fruitful way to incorporate the economic, gender, and class perspectives into a life course model. It suggests that the choices people make at the nexus of work and child investment might differ over the short and long term. It also explains how family structure and resources can map the same norms and values to different outcomes given different constraints and opportunities.

Together, these different theoretical perspectives suggest many different possibilities. For example, highly educated women earn higher wages than women with less education (England, Gornick, and Shafer 2012), which predicts they will be more likely to remain in the labor force. However, they are also more likely to be married and partnered with a highly educated spouse, which means they are more likely to have family incomes that allow them to reduce their paid labor to care for children. Although studies using experiments (vignettes) report that people across the SES distribution value intensive investments in children's development (Ishizuka 2019), research on observed practices finds that highly educated women are far more likely to adopt these parenting styles, even when these investments are flexible and low cost, such as reading to children (Bennett, Lutz, and Jayaram 2012; Kalil and Ryan 2020; Kalil et al. 2012). Our study incorporates many of these dimensions directly to see how they intersect and interact.

However, our study does not aim to test which theory is more relevant. For example, we do not evaluate whether women's work choices are shaped more by opportunity costs (economic theory) than by high-SES families' preferences for intensive child cultivation. Instead, we examine the dynamic interactions of these different processes by measuring women's work choices and parenting practices over time, as they evolve over the decade following their first birth. TCA (and life

course theory more broadly) suggests that decisions and outcomes are dynamic and complex, and differ by material conditions, such that we can see differentiated patterns play out over time across key markers such as women's education and family resources.

## Breastfeeding and Reading Daily to Children

We focus on two types of early childhood investment: breastfeeding duration and reading daily to young children at ages 3–5. We choose these childrearing practices because they are strongly promoted by pediatricians, public health campaigns, and parenting manuals, making them widely shared, symbolic practices of intensive early childhood investment (Li et al. 2005; US Department of Health and Human Services 2011; Wasik, Hindman, and Snell 2016). These practices are useful to study because their symbolic value reflects norms about what mothers *should do*. Other practices, such as enabling participation in sports and music, do not carry the same moral cues as efforts to develop health and cognitive skills in early childhood. Thus, although we are certain there are many different types of childhood investments that mothers make, we propose that the symbolic, institutionally promoted rhetoric surrounding breastfeeding and reading to young children makes these activities ones that mothers are the most likely to prioritize.

Our approach does not focus on the actual time that these practices take, although certainly breastfeeding for longer durations and reading daily take more time than not doing either of these practices. Rather, we use these practices as strong proxies for a commitment to an approach to early childhood investment that women may find difficult to combine with paid work (Blair-Loy 2009; Hays 1996). Reading daily to young children is a good example of an investment that does not take large amounts of time or require a rigid schedule. However, if our findings show that even this flexible investment is associated with reductions in paid work (controlling for stable preferences that predict both child investment and work decisions), then this suggests that reading is a proxy for a portfolio of investments that development-focused mothers find difficult to combine with paid work. By combining two different early childhood investments, and how intensively these are practiced individually and in combination, we identify a continuum of investment from least intensive (does not breastfeed or read daily to their child) to most intensive (breastfeeds for a longer duration and reads daily). We assume that mothers who breastfeed intensively and read daily to young children are more likely to practice other intensive investments as well.

These two investments differ substantially from each other. Breastfeeding is an embodied practice that only mothers can do, requires a rigid schedule, and is closely tied to norms of class-differentiated mothering in the United States (Johnston and Swanson 2007; Wolf 2011). Breastfeeding is promoted as an investment in the health and cognitive development of children (and the health of mothers as well). Reading daily to young children is also class differentiated (Cheadle 2008; Roksa and Potter 2011) but is an investment in cognitive development and literacy rather than health. Reading is an investment that either partner can provide, although in this study we measure only the mother's investment in reading to her child. From

a policy perspective, breastfeeding and reading daily to children are characterized as long-term investments in children's health, cognitive development, and literacy that pay off across children's lives (Klass et al. 2024).

Prior research shows that breastfeeding practices and decisions about work are interrelated. Some scholars argue that women who breastfeed for longer durations work substantially fewer hours because a commitment to breastfeeding determines decisions about labor force participation (Rippeyoung and Noonan 2012). Other studies show that women who anticipate they will breastfeed their infants alter their work schedules to accommodate this preference (Arlotti et al. 1998). Other studies suggest that breastfeeding and work are jointly determined (Roe et al. 1999). All of these studies look over the short term, and many do not address the important potential confounder of women's unobserved preferences determining both work and investment choices. We know of no studies that look at reading and women's work choices, nor any that look at multiple measures of early childhood investments.

## Heterogeneity in Work Trajectories after First Birth

Variation in women's work patterns after childbirth has been documented extensively, both in the timing of return to work and in longer-run employment trajectories. Women who were employed prior to birth tend to maintain strong labor market continuity, though many also follow less stable pathways and there are important differences by race ethnicity (Lu, Wang, and Han 2017). Short- and long-term patterns differ, however, and focusing on the immediate postpartum period can mask important heterogeneity in longer-run work outcomes (Killewald and Zhuo 2019). A related literature links differences in post-birth work outcomes to constraints and opportunities such as childcare costs and availability, which shape labor force participation and work hours, often with especially strong sensitivity among single mothers (Han and Waldfogel 2001; Ruppner, Moller, and Sayer 2019). Differences in occupational characteristics, such as work autonomy, can also facilitate or impede employment continuity after birth (Portier 2025). Although this literature establishes substantial variation in post-birth work trajectories and their stratification by resources, family structure, and job characteristics, it rarely links these heterogeneous trajectories to observed differences in mothers' childhood investment practices—an omission our study addresses.

## Paid Maternity Leave

Having access to paid maternity leave predicts both child investment decisions (Gonalons-Pons 2023; Pac et al. 2023) and women's attachment to paid work after birth (Baum and Ruhm 2016; Byker 2016). Thus, it is important to account for this in our analyses. Parental leave coverage in the United States is one of the lowest in the world, especially compared to other higher income countries (Pettit and Hook 2005). Although women who have the option of paid leave coverage are more likely to take a leave, they also return to the workforce faster than those without leave coverage, suggesting that their departure from the labor market is only temporary

(Berger and Waldfogel 2004). In general, there is a positive association between the length of maternity leave and breastfeeding both in countries with generous maternity leave policies, such as Canada, and in ones with limited leave policies such as the United States (Baker and Milligan 2008; Guendelman et al. 2009). We include controls for women's access to paid maternity leave in all our analyses.

## Approach

Research using qualitative and experimental methods find that women perceive that child investment competes with employment (Hays 1996; Pedulla and Thébaud 2015). Our study investigates whether multivariable analyses of a nationally representative sample support this result by measuring actual investments across a range of personal and family contexts. Specifically, we analyze how breastfeeding duration and reading investment are associated with women's labor force participation for 10 years after birth using monthly measures of work participation. We expect that the association between child investment and employment outcomes will differ by family SES. Thus, we examine how women's education, marital status, and husband's education (if married) moderate the association between intensive child investment and work outcomes. Women with more education, who are married, and whose spouses have more education may have more flexibility to reduce labor supply to invest more intensively in early childhood development.

Studies using high-quality data and sophisticated statistical methods show that women's labor force participation and earnings decline after childbirth (Kleven et al. 2019a; Musick et al. 2020), but these studies do not measure whether these robust patterns differ by the actual investments women make. This is important because families have a varied set of parenting practices that are stratified by gender- and class-based norms (Faircloth 2009; Kalil et al. 2012; Lareau 2003), and parents face different constraints based on their family resources in achieving these norms (Johnson-Hanks et al. 2011). Our first research question asks how women's labor market attachment, measured as any paid work and hours worked (conditional on working), differs by child investment intensity over the 10 years after first birth. We study these patterns across a range of investment categories. Our second research question investigates how much women's work and child investment patterns differ by family resources. We assess differences across marital status at first birth, women's and husband's education, and the relative education of husbands and wives.

## Data and Sample

The analyses use the 1979–2016 waves of the National Longitudinal Survey of Youth 1979 (NLSY79), a nationally representative sample of respondents ages 14–22 when first surveyed in 1979. In 2016, respondents are ages 51–59 and have completed childbearing. This cohort allows us to capture the post-birth work histories of highly educated women, who have children at older ages. We restrict the sample to women who have their first child in 1980 or later, to capture two years of work information before first birth. We also restrict the sample to women who have their

first births at age 17 or older and whose first births are singletons. We omit the military and poor white oversamples because these respondents are not followed in all survey years. The analytical sample includes 2,350 mothers, converted to person-month data. We conduct numerous sensitivity checks on alternative ways to construct the sample, which we report in the “Sensitivity analyses” section.

The NLSY79 contains detailed information on education, wages, income, child-bearing, marriage, and family characteristics. These data are the only nationally representative, longitudinal data set we know of that collects information on early childhood investments such as breastfeeding and reading to children. The NLSY79 includes weekly work histories, which we use to construct detailed measures of women's work experiences across the life course. We anchor all analyses to the timing of the first birth and conceptualize time in months organized around the month and year of the first birth. We array women's reproductive histories and family and work characteristics from two years before the first birth to 10 years after the first birth. In this study, time runs from month -24 (two years before the birth) to month 120 (10 years after the birth) and the first birth occurs in month 0.

The NLSY79 has a high response rate and little missing data on most of our covariates of interest. The data on breastfeeding duration are quite complete but the data on reading daily are missing for 12 percent of cases because these measures were first collected in 1984 and not asked retrospectively. As a robustness check, we use an imputation strategy to reduce this missing share to 6 percent and find consistent results. We address the sample selection produced by omitting women who had their first child before 1980 by re-estimating our models using inverse probability weights (IPWs) that predict selection into our sample and adjust for it in our analyses. Our findings are extremely robust to this adjustment. We discuss these robustness checks in more detail in the “Sensitivity analyses” section.

## Dependent Variables

We use two outcomes based on women's labor force participation and estimate separate models for each outcome. The first outcome is the probability that a woman does not work for pay in a given month, meaning that she does not report any hours of paid work in any week of the month. The second outcome is total hours worked per month, among women working any hours. We use the survey's maternity leave variables to determine women's work participation in the months immediately following birth. If a woman reports using paid maternity leave in a given month, we omit her from the analyses for the months that she is on paid leave. Women who are taking unpaid leave remain in our analyses as working zero hours for pay in the months they are taking unpaid leave.

## Independent Variables

The key independent variables of interest relate to the women's parenting practices, which we measure using two activities: how long women breastfeed their first child and whether they read daily to their children at ages 3–5. The breastfeeding categories represent any breastfeeding, rather than breastfeeding exclusively. Among

those who initiate breastfeeding, about 85 percent of cohort mothers breastfeed for no more than nine months, with a sample median of 13 weeks. Only 11 women in the full sample breastfeed for longer than two years and we have omitted these cases from the analyses. Although long-duration breastfeeding is fairly short lived in the United States for most mothers, women's relative location in the breastfeeding duration captures important differences in this practice.

We first conducted our analyses using a five-category specification based on the observed breastfeeding distribution, which captures the primary contours of women's observed practices (none, 1–6 weeks, 7–13 weeks, 14–26 weeks, and 27–104 weeks). We found no substantive differences in our results between women who breastfeed 1–6 weeks versus 7–13 weeks, so we combined these categories for parsimony and report our results using a four-category definition. We conducted numerous robustness checks on whether different approaches to measuring breastfeeding change the results and we find that they do not. We report these details in the "Sensitivity analyses" section.

Our second parenting measure describes reading daily to young children when they are at ages 3–5. We construct this measure using the NLSY79 Children and Young Adult Survey, which collected detailed information on the children of NLSY79 respondents beginning in 1984. We recode an ordinal measure of reading frequency into a binary indicator denoting whether the mother reads to her child daily between ages three and five. Reading daily at ages 3–5 signals that early childhood development practices were sustained after the first year of life.

We conceptualize not breastfeeding and not reading as least intensive and breastfeeding beyond six months and reading daily as most intensive. Most combinations fall into an ordinal continuum between these bookends, but a few contrasts are hard to interpret. For example, it is unclear whether breastfeeding 26 weeks but not reading daily is more intensive than breastfeeding 1–13 weeks but reading daily. What is clear, however, is that the former investment occurred in the first six months after first birth, whereas the latter occurred both immediately after first birth and three to five years later. For clarity, we focus our interpretations on contrasts that reflect a clear ordered ranking from less to more intensive.

Our remaining covariates measure family resources and configurations. These characteristics are the mother's education, her spouse's education (if she is married at first birth), and her age at first birth. We measure mother's education in four categories (less than high school completed, high school completed, some college completed, and college degree or higher). For husbands' education, we use these same categories plus a fifth category to denote if the woman was not married at the time of birth. These educational measures proxy both resources and potential wages and class-based preferences for child investments. We specify age at first birth in categories (17–24, 25–29, and 30–45). Our models include two time-varying covariates: whether the woman is married or unmarried in each month and whether she has any additional children age two or younger at each month (Maralani and Stabler 2018).

## Methods

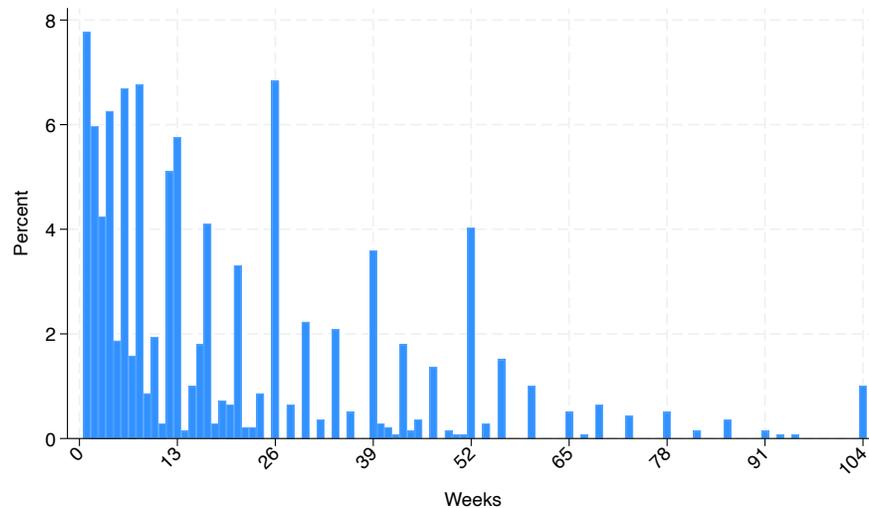
We use an event study design, which is an extension of a standard fixed effects model to outcomes that evolve across time or over the life course (Miller 2023). In addition to individual fixed effects, the event study model also includes time fixed effects. Absorbing these two dimensions in the fixed effects leaves only the interactions across time identified. This approach has been applied to the study of childbirth and labor force participation and childbirth and income after birth by numerous studies (Kleven et al. 2019a; Kleven et al. 2021; Kleven, Landais, and Sogaard 2019b; Musick et al. 2020).

The approach nets out all characteristics that are unchanging across time, including race, education, and cognitive skills, and stable preferences about family, work, and child investment. The time fixed effects net out time-specific features of the childbearing and childrearing process such as the anticipation of being a parent in the months before birth and the massive changes that all new parents experience in the months following birth. Given the individual and time fixed effects, the only variability left to explain in this model is the interactions between time and the covariates of interest. Under specific assumptions, these models can be interpreted as providing causal parameters, at least in the short term following an event (Appendix B of Kleven et al. 2019b; Miller 2023). Because we are studying choices about child investment and estimating long-run trajectories, we use the approach more conservatively and do not make causal claims. Instead, we use the models to show descriptive patterns across the life course that adjust for many sources of obvious confounding bias in the context of child rearing and work choices (i.e., preferences and unobserved characteristics). Our key contribution is to show heterogeneity in patterns of women's work by levels of child investment using the same methods as those in the existing literature. A formal description of the model is shown in the online supplement Appendix.

For parsimony, the results reported here use six-month intervals throughout, except for three-month intervals during the six months before and six months after first birth. Our results are robust to alternative categorizations of time. We do not present regression coefficients because the models produce hundreds of coefficients for each outcome. Instead, we show graphical results of model coefficients that display month-by-month changes in work outcomes relative to 18–24 months before birth using the following reference group: women with 12 years of education, married to partners with 12 years of education, who had their first child at ages 25–29, without paid maternity leave, and without a second child under age two in the family in months 24–30 after first birth.

## Results

In the NLSY79 cohort, 60 percent of mothers initiate any breastfeeding and 43 percent read daily to children at ages 3–5. Figure 1 shows the distribution of breastfeeding duration, among women who breastfeed at all. The distribution has a heavy concentration of observations in the first three months after birth. The data also show heaping at milestone months postpartum, including spikes at 3



**Figure 1:** Breastfeeding distribution (given initiation), NLSY79.

months (12 and 13 weeks, depending on whether women reported their duration in weeks or months), 26 weeks (6 months), 39 weeks (9 months), and 52 weeks (one year). These milestones reflect normative goals that U.S. women aim to reach even though most fall far short of the recommended one-year guideline in place during the decades the NLSY respondents had their first births.

Table 1 describes our sample, showing differences in family and personal characteristics by breastfeeding duration. The data show well-established associations between breastfeeding duration and personal and family resources (Li et al. 2005; Pac et al. 2023; Thulier and Mercer 2009). Among women who do not breastfeed, about 70 percent have a high school degree or less and only 11 percent have a college degree. In contrast, 45 percent of women who breastfeed for longer than six months are college graduates and only 31 percent have a high school degree or less. Among women married at first birth, these patterns are mirrored in their spouses' education as well. Among women who did not breastfeed, 29 percent were unmarried when they had their first child compared to only 14 percent of women who breastfeed for up to three months and 7 percent of women who breastfeed longer than six months. Women who did not breastfeed at all had their first child about three years earlier, on average, than those who breastfeed for the longest durations (age 24 versus 27). Access to paid maternity leave, however, is similarly uncommon among the breastfeeding groups, with only one in five women having any access to paid leave. Among those with any paid leave, the duration of leave is also comparable—about two months—regardless of how long women breastfeed.

Turning to the combination of parenting practices, women who breastfeed for longer durations are more likely to read daily to children at ages 3–5. About 62 percent of women who breastfeed beyond six months also read daily compared to 51 percent of women nursing for 14–26 weeks, 41 percent of those nursing 1–13 weeks, and 33 percent of women who do not initiate breastfeeding. These patterns show that mothers' early childhood investments are positively associated but far

**Table 1:** Sample summary statistics, NLSY79.

	0 Weeks	≤3 Months	>3 to 6 Months	>6 Months
Share of sample (unweighted)	0.47	0.30	0.10	0.13
Weighted distribution	0.39	0.32	0.12	0.16
Median duration breastfeeding (weeks)	0	6	22	46
Read daily at ages 3–5	0.33	0.41 <sup>a</sup>	0.51 <sup>a,b</sup>	0.62 <sup>a,b,c</sup>
Woman's education <sup>d</sup>				
<12 years	0.18	0.11	0.05	0.04
12 years	0.52	0.46	0.34	0.27
13–15 years	0.18	0.22	0.31	0.24
≥16 years	0.11	0.21	0.31	0.45
Marital status at first birth <sup>d</sup>				
Unmarried	0.29	0.14	0.08	0.07
Married	0.71	0.86	0.92	0.93
Husband's education <sup>d</sup>				
<12 years	0.16	0.09	0.06	0.04
12 years	0.50	0.43	0.27	0.31
13–15 years	0.19	0.21	0.26	0.18
≥16 years	0.14	0.27	0.40	0.47
Age at first birth (years)	24.1	25.9 <sup>a</sup>	26.9 <sup>a,b</sup>	27.3 <sup>a,b</sup>
Any paid maternity leave	0.17	0.22	0.21	0.17
Average leave duration, if any (months)	2.1	2.3	2.3	2.4
N	1,101	694	245	310
Person months	158,544	99,936	35,280	44,640

Notes: Statistics are weighted with sample probability weights to adjust for original sampling frame.

<sup>a</sup>Significantly different ( $p < 0.05$ ) from 0 weeks.

<sup>b</sup>Significantly different ( $p < 0.05$ ) from 1 to 13 weeks.

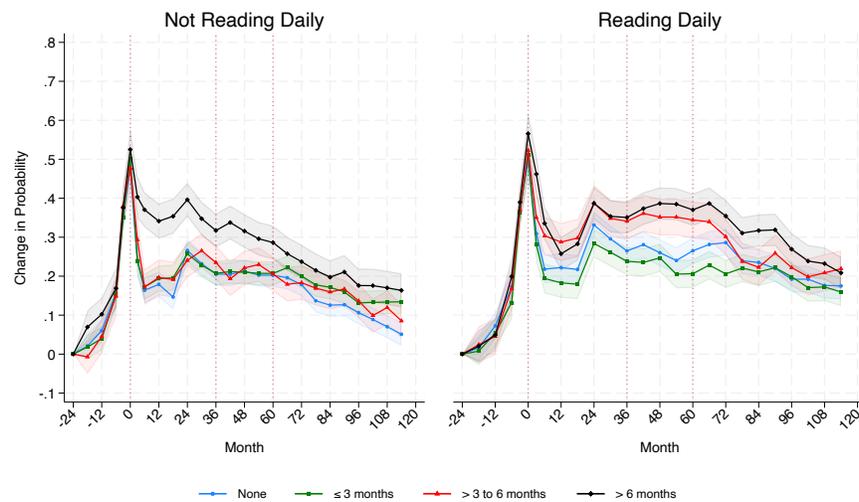
<sup>c</sup>Significantly different ( $p < 0.05$ ) from 14 to 26 weeks.

<sup>d</sup>Chi-squared test of independence has  $p < 0.05$ .

from collinear. The combination of breastfeeding and reading practices allows us to study a broad mix of different levels of early childhood investment.

## Differences in Patterns of Not Working by Early Childhood Investment

Figure 2 shows the event study results for not working for pay. The graph displays changes in the probability of not working in each month compared to 18–24 months before first birth. For simplicity, we call this window “two years” before first birth. Values above zero indicate a higher probability of not working in that period compared to two years before first birth and values below zero indicate being more likely to work for pay compared to two years before birth. The left panel shows differences by breastfeeding intensity for women who do not read daily to children at ages 3–5, and the right panel shows results for women who read daily at ages 3–5.



**Figure 2:** Changes in the probability of not working by breastfeeding and reading from two years before first birth to 10 years after, NLSY79.

The left panel shows that among women who do not read daily, those who breastfeed for longer than six months have the largest predicted increase in not working after first birth. In the five years after birth, their predicted probability of not working is about 30–40 percentage points higher than two years before birth. In contrast, women in the shorter-duration breastfeeding groups show a smaller increase of about 20 percentage points, with no meaningful differences among those groups. This is notable because these groups represent quite different levels of investment in the breastfeeding distribution. The gap between the longer-than-six-month group and the shorter-duration groups is largest in the first two years—about 15–20 percentage points—and remains visible for roughly five years, well beyond the breastfeeding period itself. By five years after birth, the groups converge, around the time children begin school. Although none of the groups are predicted to return to pre-birth levels of working by 10 years after birth, women who neither breastfeed nor read come closest to their pre-pregnancy level of work participation.

The right panel in Figure 2 shows changes in the predicted probability of not working for women who read daily to children at ages 3–5. Differences among the breastfeeding-duration groups are smaller in the first two years after birth, but a larger gap in not working emerges by three years after first birth, when our measure of reading daily occurs. Women in the highest two breastfeeding categories show the largest increases in not working, and the increase for women breastfeeding four to six months is markedly larger than in the not-reading panel. In contrast, among women who breastfeed for three months or less and read daily to children at ages 3–5, differences in not working remain modest. Differences among the breastfeeding-duration groups converge by six years after birth and are largely closed by nine years after birth. Even so, for women with more intensive long-term

parenting practices, the predicted probability of not working remains about 15–20 percentage points higher 10 years after first birth than two years before birth.

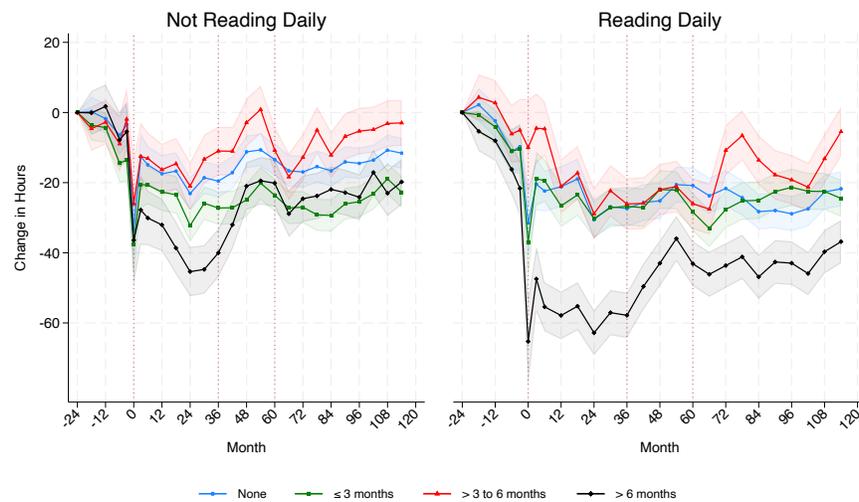
Looking across the two panels of Figure 2, we see that the most intensive parenting practices are associated with the highest predicted probability of not working in the 10 years following first birth. Our findings highlight, however, important variability in the timing of gaps depending on the level and duration of early childhood investments. Interestingly, women who invest moderately (breastfeeding for three months or less and reading daily) show similar changes in not working compared to those who do not breastfeed. Women in this group are also no more likely to be not working if they read daily at ages 3–5 compared to not reading daily. This points to an interesting exception to the assumption that higher investment will necessarily predict more conflict with paid work. The relationship between child investment and work outcomes does not follow a simple “more investment, less work” pattern. Instead, investment intensity and duration are both associated with work trajectories.

## Differences in Hours Worked

In Figure 3, we show results for changes in hours worked among women working any hours. The results again show no meaningful differences among the groups in the two years before first birth and immediately after birth. However, differences by level of investment emerge by three months after first birth and for the following 10 years. The left panel shows results for women who do not read daily when children are ages 3–5. From 3 to 42 months after first birth, women who breastfeed for more than six months have significantly larger declines in hours worked compared to women who breastfeed less or not at all. The gaps are largest two years after birth with women who breastfeed for longer than six months working 25 fewer hours per month, on average, than those who breastfeed four to six months or not at all. Changes in total hours worked for women who do not read daily converge by five years after first birth and are steady thereafter.

Women who do not breastfeed and those who nurse for four to six months have the smallest reductions in hours worked (given they are working). Women who breastfeed three months or less have a larger reduction in hours worked than those who breastfeed for four to six months, representing another exception to the pattern predicted by work/family tradeoffs. One potential explanation, which we explore in the “Discussion” section, is that women in the different groups might work jobs with different amounts of flexibility. Among women who do not read daily at ages 3–5, hours worked vary more by breastfeeding duration than observed for the probability of not working (Fig. 2, left panel). Ten years after first birth, only women who breastfeed four to six months and do not read daily at ages 3–5 have regained their pre-birth monthly hours worked. Even a decade later, all other breastfeeding groups are predicted to work about 15–20 fewer hours per month compared to two years prior to first birth.

The right panel of Figure 3 shows changes in work hours among those who read daily. This graph shows that women who breastfeed most intensively and read daily to children have sustained reductions in their hours worked (relative to two years



**Figure 3:** Changes in predicted hours worked (if working) by breastfeeding and reading from two years before first birth to 10 years after, NLSY79.

before first birth) from three months to 10 years after first birth. These women have the steepest decline in hours worked in the first two years—working an average of nearly 60 fewer hours per month compared to two years before first birth. Between 36 and 48 months postpartum, work hours increase steadily, even though this is the period when reading daily to children occurs. This points to an interesting contrast between our two outcomes. Although increases in the probability of not working are highest for this group between three and five years after birth, when reading to children is measured, conditional on working, women who invest intensively have the lowest hours in the first three years after birth. Hours then increase slowly, including during the period when we compare women's reading practices. Women in the highest investment group have a reduction of approximately 40 hours per month in work hours from 4 to 10 years after first birth.

In contrast, women in the other investment groups reduce their work hours by about 20 hours per month but maintain this level of work intensity for the next 10 years, including during the window when reading daily occurs. In Figure 2, we found that women in the top two breastfeeding duration groups who read daily have similarly elevated probabilities of leaving paid work. Given that they are working, however, the two highest investment groups differ considerably in work intensity. Women who breastfeed four to six months and read daily have a much smaller reduction in work hours relative to two years before birth and may even return to the levels they worked before first birth by seven to 10 years after birth, although these results are noisy.

Overall, we find that women who invest more intensively have larger changes in their probability of not working and their hours worked. The patterns differ in the short and long term depending on whether the investments in child development are sustained into years three to five after birth. Among women whose intensive investments are sustained for longer durations, those in the top two

investment groups leave work at higher rates than those in the lower investment groups. Women in the most intensive investment group work substantially fewer hours relative to other groups immediately after birth. Importantly, however, we find extensive variability in the results that challenge assumptions about the uniformity of work/family conflict among women. More intensive investment is not consistently associated with women leaving paid work or working fewer hours.

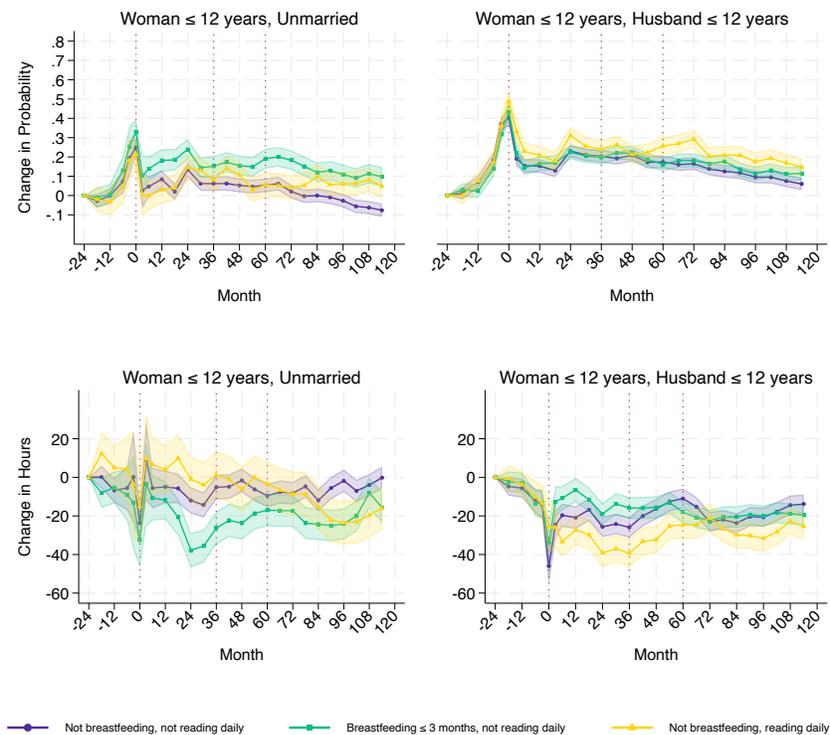
## Differences by Family Resources

Next, we examine how much the relationship between women's child investment and work participation differs by family structure, women's own education, and the education of their spouses, if they are married. In terms of resources, being unmarried at birth captures women's lower average family income and the increased demands of parenting alone immediately after birth, which translates to increased constraints on both work and child investment. Women's education measures labor market resources and the opportunity costs of not working in terms of lost wages and experience. Spouse's education shapes total family income and the relative position of spouses in terms of family income shares. For example, if a woman has more education than her spouse and is working for pay, her labor market income is likely a larger share of the family's income compared to when she has less education than her spouse.

We measure differences in family resources by extending our models to include the interaction of women's education and husbands' education (assortative mating), with an additional category for being unmarried at first birth, and allowing these associations to vary over time by child investment. Because this requires fitting a complex five-way interaction (her education by his education by breastfeeding by reading by time), we reduce the education categories for both spouses by combining the less than high school and high school only categories for both partners. We show these results in Figure 4.

Figure 4 shows differences in work outcomes by education across the life course, comparing women who were unmarried at first birth to women who were married to men with the same education level. We focus on the investment categories in which unmarried mothers most often fall and present results for women with a high school education or less, because more highly educated women are rarely unmarried at first birth (see Table 1). The top row of Figure 4 shows that the probability of not working is significantly higher for women married at first birth than for unmarried women in two of the three investment groups. Unmarried mothers are more likely to work in the months immediately following birth than married mothers. Over the 10 years following first birth, unmarried mothers generally have lower probabilities of not working, except for the group that did not breastfeed but read daily, where patterns converge one year after first birth. Among unmarried mothers, differences in child investment levels, even at low and moderate thresholds, correspond to observable differences in working. Among married mothers, these differences are not significant.

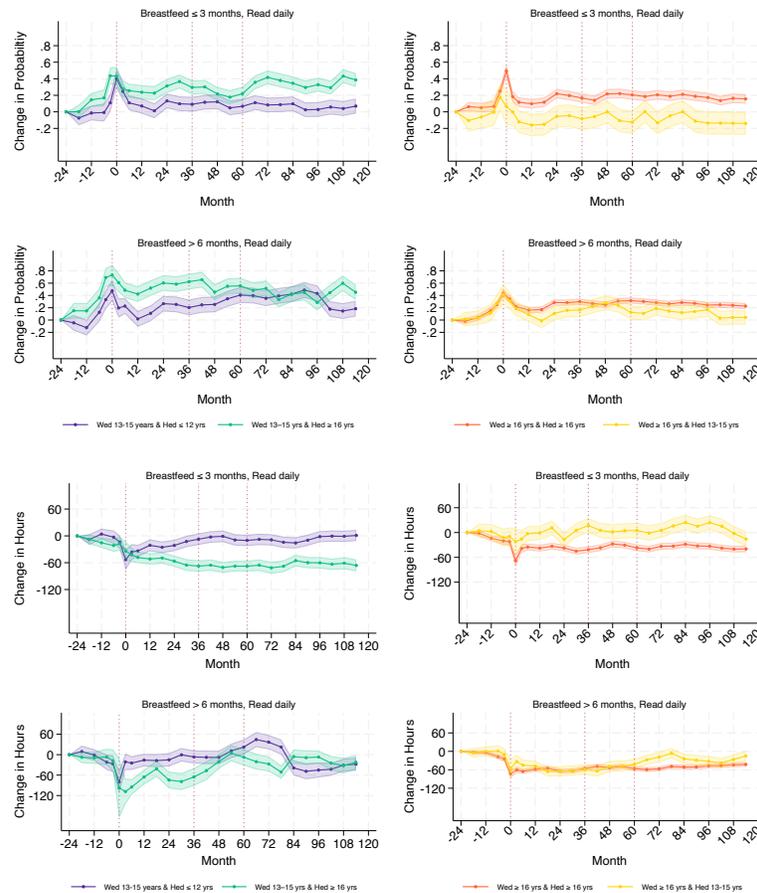
The bottom row of Figure 4 shows similar patterns for hours worked. Married mothers have much larger reductions in hours worked than unmarried mothers,



**Figure 4:** Differences in work outcomes between those married and unmarried at first birth by level of child investment, NLSY79.

especially in the year immediately after first birth. Among women unmarried at birth, those who do not breastfeed show no significant reduction in hours three months after birth, compared to two years prior. In the five years following first birth, unmarried mothers breastfeeding for three months or less and not reading work fewer hours than those not breastfeeding. In comparison, among mothers married at birth, those who breastfeed for shorter durations or not at all and are not reading daily work about 20 hours less per month compared to two years before birth. Those not breastfeeding but reading daily have the largest declines in hours worked after birth (between 30 and 40 hours per month) for five years after first birth, after which differences converge.

Figure 5 shows differences by assortative mating. We focus on highly educated women and more intensive investments. The left side shows results for women with 13–15 years of education, and the right side shows results for women who are college graduates. For women with some college education, we compare the work patterns of women who have more versus less education than their husbands. For college graduates, we compare the work patterns of women who have more education than their husbands versus the same education level, because this is the highest category of education. We show results for breastfeeding three or fewer months and reading daily and for breastfeeding longer than six months and reading



**Figure 5:** Differences in work outcomes by educational assortative mating and level of child investment, NLSY79.

daily. The results for breastfeeding four to six months and reading daily fall between the two shown.

The first row shows results for changes in the probability of not working for women who breastfeed for shorter durations and read daily at ages 3–5. In both cases, women whose husbands have less education than they do are more likely to be working than those who are married to men who are college graduates. The second row shows results for the most intensive investment group (breastfeeding beyond six months and reading daily). Probabilities of not working are higher for this more intensive group (about 0.6 versus about 0.4), and differences by assortative mating persist for women with some college education in the first five years after first birth. Differences for college graduates are smaller and more variable but suggest the same pattern: women with more education than their spouses are more likely to be working than those married to college graduates.

Rows three and four of Figure 5 show results for hours worked. We find similar results for these outcomes: women who have more education than their spouses work more hours, on average, than women whose spouses have college degrees.

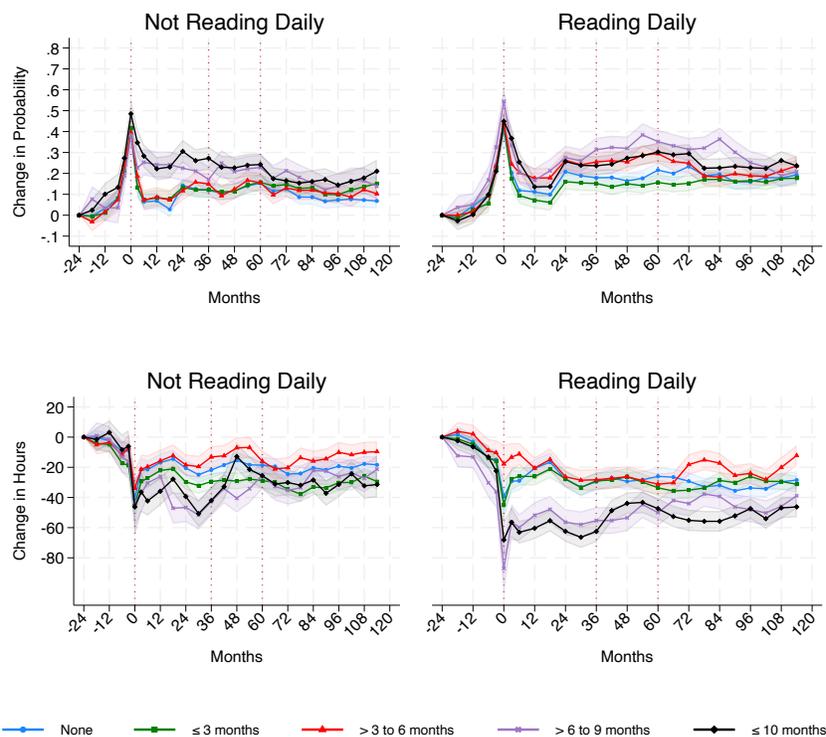
This is true for all groups except college-educated women in the highest investment category, for whom results vary over the life course and are noisy. We also find that among women married to partners who are college graduates, those who are themselves college graduates work more hours on average than those with less education, which is consistent with economic theories that highly educated women have higher opportunity costs of leaving paid work. Among those who invest the most intensively, gaps in hours worked are largest, although estimated imprecisely, in the first three years after birth, after which the groups converge. Finally, for women who have more education than their spouses, there is a notable rise in work hours five years after birth among those who invest most intensively, which coincides with when children enter school and our measure of reading daily ends.

## Sensitivity Analyses

There are many different ways to conceptualize and measure samples and variables. In this section, we show that our results are quite consistent across different conceptualizations. To test whether the results for the most intensive investment group are driven by those at the extremes of the breastfeeding distribution, we re-estimate our main analyses using a five-category specification for breastfeeding duration. This approach separates women who breastfed between six and nine months from those who breastfed for more than nine months (the 85th percentile). Figure 6 shows that the results remain quite consistent across these more detailed categories. Women who breastfeed between six and nine months show similar reductions in work participation as those breastfeeding longer than nine months (40 weeks). This suggests that our results for the most intensive investment group are not driven by women who nurse at the extreme end of the breastfeeding distribution.

Next, we examine the sensitivity of our results to two types of sample selection. First, we apply IPWs to adjust for selecting only women whose first birth occurred in 1980 or later. The results are nearly identical (not shown) and indicate no evidence of bias. This is likely because the cohort's youngest members provide ample prospective data on births at younger ages, which are the ones being censored. Second, we address missing data on reading to first children at ages 3–5 by using information about reading to second children at those ages for women who have more than one child. Reading duration for first and second children is strongly correlated ( $r = 0.75$ ). This imputation approach reduces the missing data on reading from 12 percent to 6 percent and allows us to keep a more complete subset of the sample. Our results do not change when we use this alternative approach (results not shown).

We test the robustness of our results to including a measure of investment in second-born children. Although our models already include a time-varying covariate for future fertility (whether the woman has a child under two in the household), perhaps what matters is the intensity of investment in additional children. To examine this, we limit the sample to women who have two or more children and incorporate a measure of whether women read daily to their second child between birth and age two. We use this earlier investment window so that it is more likely to overlap with the 10 years following first birth. We show these results



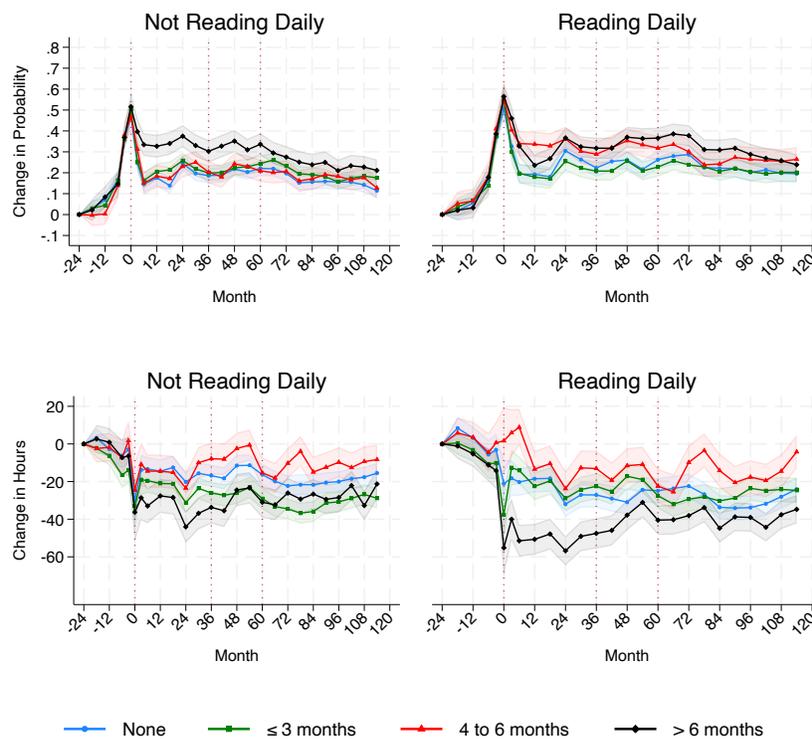
**Figure 6:** Changes in work outcomes by child investment sensitivity check: disaggregating the top breastfeeding duration category, NLSY79.

in Figure 7. Although the graphs are noisier due to the smaller sample (excluding 20 percent of sample women with only one child), the findings remain quite consistent.

Finally, in Appendix Figure 1 of the online supplement, we show the results arrayed by reading, instead of breastfeeding. These results are identical to those shown in Figures 3 and 4; this visualization simply allows the reader to more clearly compare gaps by reading practices within each breastfeeding category. The plots are substantively consistent with our reported results.

## Discussion and Conclusion

A well-established quantitative literature documents that childbirth causes women to leave paid work (Kleven et al. 2019a), yet the role that child investment may play in this pattern is surprisingly understudied. In-depth qualitative studies find that women who invest more intensively in children's development struggle to reconcile cultural norms of good mothering with inflexible work environments (Blair-Loy 2003; Hays 1996; Stone 2008). However, few studies examine how the intensity of women's child rearing practices is associated with short- and long-term work outcomes after childbirth. This is important to do because it sheds light on taken-for-granted assumptions about why women exit paid work and uncovers the variability in women's experiences at this important nexus of inequality. Although



**Figure 7:** Sensitivity results for including a measure of reading daily to second children at ages 0–2 for those with two or more children, NLSY79.

our study does not make causal claims about whether intensive parenting leads women to reduce employment, by linking early childhood investments—specifically breastfeeding duration and reading to three- to five-year-olds—to changes in working for pay and hours worked from two years before to 10 years after first birth, we examine how parenting practices and family resources are jointly associated with women's work and family trajectories after having children.

An important contribution of our study findings is that work patterns differ by both the level of maternal investment and whether intensive parenting is practiced over the short or longer term. Consistent with the qualitative literature on intensive mothering, we find that being in the highest investment group is systematically associated with the largest increase in the probability of not working in the decade following first birth, and the largest reduction in hours worked among those working any hours. When more intensive parenting is practiced over the longer term, the second highest investment group is also associated with a large increase in the probability of not working, relative to two years before first birth. These findings are consistent with studies that argue that enacting ideal mothering norms makes it difficult to also embody ideal worker norms (Blair-Loy 2003; Hays 1996). The highest investment group also has the longest lasting association with reductions in working after birth, which persists even 10 years after first birth.

Our findings also show, however, that the relationship between intensive practices and work outcomes is more complex than a simple “more investment, less work” pattern. Women at each higher level of investment do not consistently show lower work participation. For example, there are no significant differences between the two highest investment groups in how much the probability of not working increases after birth, despite the groups representing the third versus the fourth quartiles of the breastfeeding distribution. This result holds even when we disaggregate the most intensive group into women breastfeeding between six and nine months and those breastfeeding longer than nine months. Nor are there significant differences in most outcomes between women who do not breastfeed at all and those breastfeeding three months or less (regardless of reading). These associations also differ by work outcomes. Women breastfeeding three to six months and reading daily at ages 3–5 show a significantly larger increase in the probability of not working compared to women investing less intensively, but among those working any hours, the groups do not differ in hours worked. Taken together, this heterogeneity challenges the implicit assumption often embedded in interpretations of work/family conflict that investing more intensively in children is associated with higher exits from employment.

What might explain women’s capacity to combine more intensive investments in the short-term or moderate long-term investments with paid work? Although the United States lacks a federal maternal leave policy, state and workplace policies might create enough flexibility to combine a certain threshold of early childhood investment for at least a limited time. Job characteristics and co-parents might also create important flexibility that informs women’s choices and outcomes. Women can also make personal sacrifices in leisure, sleep, and wellbeing but only up to a finite personal capacity. Our statistical models account for both measured and unmeasured characteristics that are stable over time. However, dynamic contexts such as negotiations with managers or spouses could shape women’s decisions about whether and how much they work. Qualitative research has found these themes to be salient in women’s experiences with child investment. Examining these possibilities in future research would provide a more complete picture, building on the robust evidence this study contributes.

Our results are consistent with life course theory, which emphasizes that constraints shape individual choices, even when people hold similar preferences (Johnson-Hanks et al. 2011). Our findings show that work outcomes are differentiated by family structure and educational resources. Given the same level of investment, women who are unmarried at first birth are more likely to work, and, among those who work, work more hours in the months immediately after birth than those who are married. Women who have more education than their partners, and whose earnings might therefore account for a larger share of the family’s income, are also more likely to work after birth compared to women who are married to college graduates (our highest education category). We also find evidence consistent with highly educated women facing higher opportunity costs of leaving paid work. Holding child investment at a high level practiced over the long term, women who are college graduates work more, on average, than women with less schooling, holding spouse’s education constant.

Our analyses use high-quality data and advanced statistical methods; nonetheless, there are several limitations inherent in this study. First, data on additional measures of women's early childhood practices would help us capture the full portfolio of investments that women make, for which breastfeeding duration and reading serve as proxies. Second, quantitative studies of work–family choices would benefit from more detailed data on fathers' household and childcare activities, as well as the couple-level negotiations that shape women's decisions about balancing work and family. Third, our study does not include measures of work characteristics, which qualitative research on work–family conflict suggests may play a role in pushing mothers out of paid work after birth (Blair-Loy 2003; Stone 2008). Characteristics such as schedule flexibility and the option of working part time might play an important role in understanding the relationship between child investment and work. Couple-level negotiations and work characteristics might also jointly determine both women's parenting choices and their work decisions. Building on the robust evidence this study contributes, addressing these gaps in future research would provide a more complete picture of how choices between child investment and work participation evolve over time.

Going beyond the individual level, our findings also speak to broader trends in women's employment. Intensive child investment might offer a potential explanation for why female labor supply, especially of mothers, which had increased steadily until the late 1990s, has stalled (Cotter, Hermsen, and Vanneman 2011; England 2010). Despite sizable increases in men's participation in domestic work and childcare (Sayer 2005; Sayer, Bianchi, and Robinson 2004), there remains a strong association between intensive childrearing and mothers' work patterns across the life course. These trends coincide with the rise of cultural narratives of intensive mothering and public health messaging that identifies breastfeeding and reading to children at early ages as inputs that will have long-lasting benefits for children. The intensive childrearing that some mothers pursue may come at the cost of their labor market experience. These tradeoffs might be ones that women make reluctantly because paid work lacks flexibility, or women might make strategically, to maximize investments in the next generation. Some women may forgo resources and status gained through their own earnings, work experiences, and career growth for the potential to enhance their children's future life chances and social standing.

Taken as a whole, our findings show that women on average work less after birth, even 10 years later, than they did two years before first birth. Yet the relationship between child investment and work is far from uniform. Differences in work trajectories by child investment level emerge in the first five years after birth and then converge, revealing that families make different short- and medium-term tradeoffs between maternal labor force participation and intensive child investments. These results, even if only associational, challenge simple accounts of work–family conflict that assume more intensive parenting leads to greater exits from employment. Instead, they reveal significant heterogeneity in women's work outcomes, shaped by both individual investments and broader family constraints. In this way, our study contributes generalizable, multivariable evidence that extends qualitative insights, grounds them in life course theory, and helps explain how women's labor

force participation evolves in the 10 years following birth depending on their child investments.

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