

O Father Where Art Thou?

Early maternal employment and child development when fathers and intrahousehold task division come into the picture.

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O Father, Where Art Thou? Early maternal employment and child development when fathers and intrahousehold task division come into the picture.

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Abstract

This article provides new evidence for a developing country regarding early maternal employment and child development by exploring alternative household care arrangements that could compensate for a loss in maternal care time. First we analyze whether the condition of maternal employment, its intensity —part-time or full-time jobs— and the timing of a mother's entrance into the labor market affects her child's development; we focus on the effects of intrahousehold distribution regarding childcare and household tasks on the decision of maternal employment and child development.

We address the causality of early maternal labor and its conditions on a child's probability of being considered at risk in several development dimensions by estimating seemingly unrelated equations with instrumental variables; therefore we account for simultaneity in decisions regarding maternal employment and formal childcare.

Results indicate that neither maternal employment, nor the job's intensity influences a child's development. However, fathers' involvement in childrearing and more equitable distribution of intrahousehold tasks can foster child development as much as maternal labor supply.

Keywords: Child development; Parenting behavior; Maternal work conditions

JEL Classification: J13; J22; J81

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Resumen

Este artículo aporta nueva evidencia para un país en desarrollo en relación con el empleo temprano de la madre y el desarrollo del niño, explorando acuerdos de cuidado alternativos en el hogar que podrían compensar una pérdida de tiempo de cuidado de la madre. En primer lugar, analizamos si el empleo materno, su intensidad –trabajos a tiempo parcial o completo– y el momento de entrada de la madre a mercado laboral afectan al desarrollo de su hijo; nos centramos en los efectos de la distribución intrafamiliar en relación con el cuidado de los niños y las tareas domésticas sobre la decisión del empleo materno y el desarrollo del niño.

Abordamos la causalidad del trabajo materno temprano y sus condiciones sobre la probabilidad de que un niño sea considerado de riesgo en varias dimensiones del desarrollo mediante la estimación de ecuaciones aparentemente no relacionadas con variables instrumentales; por tanto, damos cuenta de la simultaneidad en las decisiones relativas al empleo materno y al cuidado formal de los niños.

Los resultados indican que ni el empleo materno ni la intensidad del mismo influyen en el desarrollo del niño. Sin embargo, la participación del padre en la crianza de los hijos y una distribución más equitativa de las tareas intrafamiliares pueden favorecer tanto el desarrollo infantil como la oferta laboral materna.

Palabras clave: Desarrollo infantil; Comportamiento de los padres; Condiciones laborales de la madre

Clasificación JEL: J13; J22; J81

1. Introduction

There exists a notable consensus in the literature regarding the importance of early investments for children's development. In particular, investments during the first stages of an individual's life are understood to have long lasting effects on future outcomes, such as educational attainment, labor market outcomes, or behavioral outcomes like drug consumption and teenage pregnancy, among others (Heckman et al. 2011 and 2014). Critical and sensitive periods for skills formation in childhood and the different roles played by cognitive abilities and socio-emotional endowments across individuals' life cycle require different investments over time (Heckman and Mosso, 2014; Heckman et al., 2013).

In this framework, parental investments play a major role in shaping children's abilities, and have different effects over the course of a child's life cycle; while cognitive skills are more affected during the early stages, non-cognitive skills can be shaped greatly by interventions at later stages (Cuhna and Heckman, 2008). Although the time parents devote to child care positively affects the child's development, their employment also protects children against poverty by increasing resources that could be expended on the child. Given this, families face a potential conflict as to whether to allocate time toward paid work, childcare, household tasks or leisure (Thévenon and Luci, 2012). Thus, attempting to solve the potential trade-off between parental employment and child development, the literature has paid much attention to the effect of early maternal employment on the development of children's cognitive and non-cognitive abilities.

In this regard, Colley and McPherran (2013) trace conflicting viewpoints derived from economic and psychological models concerning maternal labor participation and child development. While economic models stress a trade-off between money and time, in which maternal employment could increase economic resources devoted to the child but decrease time and energy devoted to parenting, psychological models highlight that maternal employment may inhibit children's development. These obstacles to development are two-fold: first, these models suggest that employment may reduce the amount of time and experience that mothers have to build sensitive, responsive parenting skills that are essential to the development of secure infant attachment. Second, balancing employment and the high care demands of infants may generate maternal stress that negatively influencing maternal well-being, parenting quality and ultimately, child outcomes. Therefore, from a theoretical point of view, the effect of maternal labor on child development is not clear.

Although a great number of studies within the economic literature analyze the effects of early maternal employment on subsequent children's development, no conclusive results have been reached (Hsin and Felfe, 2014).⁴

The literature indicates that several factors affect the diversity of results. For instance, Blau and Grossberg (1992) highlight that the proper assessment of the impact of early

⁴ Bernal (2008) extensively reviews the empirical literature on early maternal employment and subsequent child development.

maternal employment on children's development should address the timing of the mother's labor supply relative to the birth of her child. In particular, the authors find that maternal employment negatively affects children's development when it occurs during the first year of the child's life and a potentially offsetting positive effect when it occurs during the second and subsequent years; concluding that maternal employment throughout a child's three or four years would have no net effect on the child's cognitive ability.

Conversely, Ruhm (2004) suggests a deleterious effect of early maternal employment on children's cognitive ability. Specifically, this author finds that maternal employment during the first year of a child's life is negatively associated with verbal ability development for children aged three and four years old; effects that are partially (but not completely) offset by increases from job-holding during the next two years. Also, that maternal employment in the first three years of her child's life is more strongly negatively related to the reading and mathematics achievement at ages five and six.

Besides the timing of a mother's insertion in the labor market, the literature has recognized that the intensity of a mother's job could affect child development differently (Coley and McPherran, 2013). While part time jobs can allow for more time (in comparison to full-time jobs) to be dedicated to the child, larger incomes derived from full-time jobs increase economic resources that could be devoted to the child.

In this line, Hsin and Felfe (2014) stress that although the existing evidence confirms that working women spend less total time with children than their non-working counterparts, it is not clear whether these differences translate into more negative child outcomes. The authors argue that parents can mitigate the potential deleterious effects of maternal employment by trading quantity of time for higher "quality" time; highlighting that not all types of shared time together necessarily yield better child outcomes.

In turn, there is evidence showing that alternative care arrangements, such as usage of childcare centers or informal care, can also mitigate the loss of maternal time devoted to her child's care.⁵ Coley and McPherran (2013) argue that the negative effects found in the literature on children's later functioning could be ameliorated if early maternal employment is analyzed jointly with other types of non-maternal care, such as formal center-based care, and by considering childrearing practices, home contexts, and cultural norms regarding economic and family roles.

Moreover, although fathers may partially offset the loss of maternal time by increasing their involvement (Hsin and Felfe, 2014), economic empirical studies fail to recognize the key role of fathers as caregivers in their children's development. By contrast, other disciplines such as sociology find a positive association between early paternal involvement in childrearing and child development.⁶

⁵ See Del Boca (2015) for an extensive review of this literature.

⁶ See Opondo et al. (2016) and McMunn et al. (2015).

Thus far, empirical studies have analyzed the impacts of early maternal employment as well as the effects of other family care arrangements on children's development, but done so separately. Studies have not yet properly addressed causality between early maternal employment and child development. Specifically, Havnes and Mogstad (2011) stress that endogeneity issues arise as the substitution between subsidized and informal childcare, misspecifications of functional forms for the employment and child care equations, and violations of the exclusion restrictions, are not accounted for. In addition, omitted variables and mothers' and children's unobserved characteristics may threaten the identification of causal effects of maternal employment on the child's development. Not taking into account the joint decisions that families make regarding maternal employment and childcare arrangements would likewise impair analysis (Bernal, 2008). Ignoring the attitudes and norms that influence families' decision process regarding childcare and maternal labor supply could also affect the results regarding early maternal employment and child development (Thévenon and Luci, 2012).

This study analyzes the relationship between maternal labor supply and early child development in Montevideo, the capital of Uruguay.⁷ Specifically, we aim to answer the following questions: First, to what extent does maternal labor supply affect an infant's probability of being at risk of not reaching cognitive and non-cognitive developmental markers? Second, do alternative household care arrangements, such as formal and informal care by other family members, compensate for time devoted by a mother to caring for the child? Third, does a father's involvement in childrearing compensate for the effects of maternal employment on child development? Lastly, how does intrahousehold task distribution affect maternal employment decisions and child development?

To answer these questions, the empirical strategy follows instrumental variable analysis and conditional mixed process analysis to better account for endogeneity and simultaneity issues that are expected to arise in these types of studies; as pointed out by Bernal (2008). By using this strategy, we first analyze the extent to which maternal labor supply decisions influence her child's probability of attaining certain development domains. Second, we explore whether a mother's labor intensity, that is, whether the mother decides to not work, to work part-time or full-time, affects her child's development. Third, we study the extent to which the timing of maternal entry to the labor market after childbirth affects infants' cognitive and non-cognitive abilities. Finally, we focus on intrahousehold decisions regarding childcare and household task distribution, emphasizing fathers' involvement in childrearing, and its effects on maternal employment decision and, indirectly, child development.

We thus aim to contribute to the existing empirical literature on early maternal employment and child development in several ways. First, by providing evidence for a developing country, which is far less addressed in the literature. Indeed, most related literature stems from Anglo-American countries with labor markets, family structures

⁷ Almost half of the population lives in Montevideo according to the National Statistics Institute (INE).

and cultural norms regarding maternal labor supply and childrearing that may differ from those in a developing country such as Uruguay.

Second, we build on previous literature by taking proper account of causality between maternal employment decisions and child development. Unlike previous studies that report associations between early maternal employment and child development, this study uses conditional mixed process and instrumental variable analysis to address causality; it also simultaneously accounts for the impact of the mother's joint decisions regarding labor market participation and use of formal care in children's development.

Third, we contribute to the literature on early maternal employment and child development by alternatively considering the effects of fathers' involvement on childcare and the prevailing gender norms regarding intrahousehold distribution of tasks as plausible factors influencing parental decisions on maternal employment and the usage of childcare. Thus, we can provide a broader picture on those factors that likely affect the potential conflicts that families face regarding early maternal labor supply and its effects on child development.

Overall, we expect our findings to contribute to policies that aim to reconcile family, work and child outcomes with gender equality; it can provide insights regarding the effects of alternative family care and work arrangements on child development and on inequalities that emerge in the labor market between women and men due to childrearing, i.e. women facing lower labor participation, lower career development, and wages (Thévenon and Luci, 2012).

This paper is organized as follows. Section 2 describes the data used in our study and highlights the overall patterns in the data. Section 3 introduces the methodology used to identify the association between maternal working conditions and children's development. After results are presented in Section 4, the following section concludes.

2. Data and descriptive analysis

We rely on two cohorts of the National Survey of Nutrition, Child Development, and Health (ENDIS: *Encuesta Nacional de Desarrollo Infantil y Salud*), national representative surveys carried out by the National Statistical Institute (INE: *Instituto Nacional de Estadística*).⁸ The first cohort was rolled out in 2013, interviewing households with children aged 0 to 47 months old; the second one was carried out in 2018, and was comprised children aged 0 to 59 months old. As we are interested on the effects of maternal employment on children's development at an early age, we focus on the first waves of both surveys, despite the longitudinal nature of the ENDIS. The total number of children sampled across both cohorts is 5,675. However, complete information is only available for 5,511 of them.

⁸ For detailed information on the ENDIS see <https://www.gub.uy/ministerio-desarrollo-social/endis>

2.1. Data and descriptive analysis

For the purpose of this study we restrict the sample in multiple ways. First, we restrict the data to all households in which both parents cohabit at the time of the survey. This is due to our interest in focusing on intra-household decisions regarding maternal labor supply, care arrangements, i.e. use of formal childcare centers, and the effects of those decisions on child development. Second, we restrict our analysis to Montevideo, the capital of the country, as psychometric tests in 2013 were only implemented for this region. In turn, we drop all observations in which the mother was not the respondent of the survey because background employment information is only gathered for the individual interviewed.⁹ Overall, we obtain a final sample of 949 observations, 367 for 2013 and 582 for 2018.

Although this analysis is not representative of all households with children younger than four years old living in Montevideo, it is informative on intra-household decisions regarding child care arrangements, maternal employment and fathers' involvement in child development when both parents co-reside in the household. As such, it can nonetheless prove useful for policy recommendations.¹⁰

2.2. Key variables and descriptive statistics

We define the condition of maternal employment according to the INE understanding of the term: a mother is employed if she has either worked at least an hour in the past week or has a job she expects to return to. Full-time job refers to women having worked 35 hours or more in the previous week; while part-time jobs refer to women working less than 35 hours the previous week.

In turn, attending a formal childcare center is defined as a dichotomous variable, equal to 1 when it is reported that the child attends a formal care center and 0 otherwise. Table 1 shows that around half of the children with employed mothers attend formal childcare centers and 71% of mothers were employed at the time of the survey. This falls in stark contrast with children of non-employed mothers, of whom only 27.1% are enrolled in formal care centers. Moreover, the percentage of mothers who work without relying on formal childcare centers is surprisingly high, accounting for 37.1% of the sample.

⁹ 95.6% of the interviewed are mothers.

¹⁰ Table A.1 in the Appendix shows the main differences between the restricted and the full sample (columns 2 and 3).

Table 1. Maternal employment and formal centers care attendance

		Child attends formal care centers		
		No	Yes	Total
Mother:	Not employed	21.3	8.1	29.4
	Employed	36.3	34.4	70.6
	Total	57.5	42.5	100.0

N = 949

Table 2 shows maternal employment rates at different points in time: during pregnancy, six months after birth, and at the time of survey; each conditioned on maternal employment status before pregnancy. None of the mothers who had not worked prior to the pregnancy were employed either during pregnancy nor in the six months following childbirth. Furthermore, less than a third of the women were employed at the time of the survey. Although 91.1% of the women surveyed were employed during pregnancy, the rate fell to 66.7% six months after birth of the child, bouncing back to 80.6% at the time of survey.

Table 2. Maternal employment at different points in time, conditional on employment status at the time of the survey

Employed before pregnancy	During pregnancy	6 mo. after birth	At time of survey	N
No	0%	0%	30.3%	178
Yes	91.1%	66.7%	80.6%	754

We approximate child development dimensions by considering two different tests: Ages and Stages Questionnaire, Third Edition - ASQ-3 and Ages and Stages Questionnaire, Social-Emotional –ASQ-SE. Both tests have good psychometric characteristics and apply international standardizations that are widely used as measures of child development (Squires et al., 2009; Squires et al., 2002).

ASQ-3 is comprised of five dimensions: fine and gross motor skills measuring cognitive abilities; problem-solving skills and socio-personal skills proxying non-cognitive abilities; and communication, a mixture of both cognitive and non-cognitive abilities. The test can be used for children up to age 66 months. The questions vary according to the child's age in order to account for different degrees of development across her life cycle. The interviewed parent evaluates whether her child can fully, partially, or cannot complete a certain task, resulting in a score of 10, 5 or 0 respectively. The child is evaluated across 30 items, with six items per area (see Squires et al. 2009 for a detailed description). Higher aggregate scores show higher levels of child development. The ENDIS provides standardized test scores against an international reference table; this allows for the identification of monitoring and risk/clinical areas.

ASQ-SE consists of a battery of eight questionnaires designed for children aged 3 to 66 months. Unlike ASQ3, which assesses maturational achievements, ASQ-SE evaluates on a list of indicators of disturbance —behaviors— relevant to socio-emotional development. We consider dummy variables for each domain of the child's development, signaling whether the child is at a “monitoring” or “risk” level in a given dimension.

Table 3 presents the mean differences of a child's probability of being “at risk” in certain domain of her development with employed and not-employed mothers, and according to the child's age. We observe statistically and significant differences in ASQ-SE for all ages. However, upon closer inspection, differences arise across ages; particularly at age 3, lags in problem solving and ASQ-SE are more prevalent. This seems to be a particularly problematic age.¹¹

Table 3. Difference in means of probability of being at risk for different child development dimensions between employed and not employed mothers, by child age

	All ages	Age = 0	Age = 1	Age = 2	Age = 3
ASQ3: Communication	-0.016 (0.022)	-0.065 (0.043)	-0.049 (0.044)	-0.004 (0.041)	0.066 (0.034)
ASQ3: Fine motor skills	0.004 (0.030)	-0.111 (0.068)	0.033 (0.049)	0.037 (0.059)	0.051 (0.066)
ASQ3: Gross motor skills	0.017 (0.027)	-0.043 (0.075)	0.066 (0.043)	-0.026 (0.044)	0.095* (0.044)
ASQ3: Problem solving	0.028 (0.025)	-0.065 (0.061)	-0.039 (0.043)	0.106* (0.046)	0.152** (0.054)
ASQ3: Personal-social	-0.025 (0.026)	-0.134* (0.066)	0.002 (0.046)	-0.004 (0.048)	0.035 (0.050)
ASQ-SE	0.043* (0.021)	-0.022 (0.040)	0.027 (0.030)	0.001 (0.047)	0.206*** (0.053)
N	949	215	305	255	174

* p<0.05, ** p<0.01, *** p<0.001

The key independent variables of this study refer to the father's involvement in childrearing, and how intra-household arrangements affect decisions regarding maternal labor supply and the use of formal childcare centers. We consider a dummy variable that indicates whether the father reports taking care of the child or not, and a variable referring to the hours the father dedicates to the child.

Table 4 presents different measures of paternal involvement in childcare and the mother's condition of employment. Paternal involvement increases with the intensity of maternal employment in all cases. Time in father's care increases by 10 percentage points (pp) when mothers are employed; although the differences between part- and full-time

¹¹ Table A.2 shows that employment rates are not statistically different for mothers of children of different ages.

employments are not statistically significant. Hours of paternal care are higher when mothers' employment intensity increases, with statistically significant differences both when measuring hours per week and as a share of total care time.¹²

Table 4. Paternal care intensity, conditional on mother's employment

	Paternal care (y/n)	Paternal care (hs/wk)	As a % of total care time	N
Not employed	0.829 (0.023)	31.586 (1.741)	0.268 (0.011)	263
Employed part-time	0.927 (0.015)	36.618 (1.561)	0.326 (0.009)	288
Employed full-time	0.970 (0.009)	40.780 (1.389)	0.362 (0.008)	369

Standard error in parentheses. N = 920

Second, we consider alternative survey responses in relation to intrahousehold distribution of tasks within the cohabitating couple as a way of characterizing the household. Household tasks reported in the ENDIS refer to daily cooking, household cleaning and organizing, paying debts, buying food, making small home repairs, and tasks related to the child, i.e. feeding and bathing, taking the child to school or to medical controls, disciplining the child if she misbehaves. By using the Principal Component Analysis, households are grouped as: cooperative-deconstructed, patriarchal, and cooperative-traditional.

Cooperative-deconstructed households are those in which both parents equally distribute household and childcare tasks. Patriarchal households are more traditional: couples follow more traditional gender roles, i.e. women cook, clean, take care of the child, while the father manages the money, and is responsible for small repairs of the house. In turn, cooperative-traditional households are those in which the father is involved in specific activities such as playing with the child, disciplining the child if she misbehaves, and makes small repairs, but is not involved in daily tasks such as cleaning and cooking, or commonly taking care of his child, i.e., taking his child to school, or medical controls.

2.3. Control variables

We specifically include socio-demographic characteristics of the mother, such as age, race/ethnicity, education attained, as well as personality traits from the Big Five Inventory.¹³ Children's characteristics included are age (in months), gender, whether the child was born prematurely, and/or with low birth weight. We also consider the per-capita household income but exclude the mother's income. Father's socio-demographic

¹² Total care time includes all informal care hours by family members or hired personnel, and formal care time in daycare facilities.

¹³ See Almlund et al. (2011) for an extensive description of the literature on personality traits.

characteristics such as age, race, education attained, and employment condition are included in models in which the father's care is studied.

3. Methodological frameworks

This study analyzes whether child development is affected by maternal employment decisions and whether there are alternative mechanisms that compensate for a potential decrease in maternal time care in cases where a mother works. In this respect, previous literature has addressed simultaneity in household decisions regarding maternal labor participation and children's care center attendance, which can in turn affect infants' development (Bernal, 2008). For instance, a mother and child's unobserved characteristics could be correlated and thus could plausibly affect prospective decisions.

In order to deal with endogeneity issues that can arise in these types of studies, we use instrumental variable analysis and a conditional mixed process (cmp) strategy in which a system of seemingly unrelated equations are estimated.¹⁴ This strategy acknowledges that maternal labor participation is affected by the mother's and the child's unobserved characteristics, and by alternative care arrangements; the household can decide, for instance, whether to use formal or informal childcare.

3.1. Model specifications

We first consider the maternal employment decision, that is whether to work or not (E_{ijt}) conditional on her characteristics, such as age, gender, education, and personality traits; her child's characteristics; household characteristics, like per capita income; and the different childcare arrangements that parents take into consideration, like informal care provided by other relatives, or formal daycare.

As endogeneity issues can arise due to the plausible simultaneity of the maternal employment decision conditional on the alternative care arrangements, i.e. the availability of formal care child centers, a second equation considers the factors influencing formal daycare attendance (C_{ijt}). At last, a third equation estimates the associated factors influencing a child's development (DN_{ijt}), conditional on previous decisions taken.

The estimation of a system of equations allows for correlations between unobservable characteristics that affect the different outcomes. The expected utilities for maternal labor supply, formal childcare use, and child's development are the following:

$$(1) DN_{ijt} = h(X; E_{ijt}; \phi_{DN}; u_{DN})$$

$$(2) E_{ijt} = (X; X_E; \phi_E; u_E)$$

$$(3) C_{ijt} = g(X; X_C; \phi_C; u_C)$$

¹⁴ See Roodman (2010).

where j represents the mother, i the child, and t the period of time considered. X_E and X_C are the instrumental variables required to identify the model; sets of variables that directly affect employment and formal childcare choices, respectively; but not directly affect the other outcomes of interest. The instrumental variables considered in the analysis are further explained below. X is a set of variables that commonly affect the three equations.

$\phi_E, \phi_C, \phi_{DN}$ are unobserved factors that could differently influence the alternative outcome variables.

The vector of errors $u = (u_E, u_C, u_{ND})$, is supposed to be trivariate normally distributed as: $uN_3(0, \Omega)$, in which the main diagonal of the correlation matrix Ω is 1, and out of the main diagonal $\rho_{EC}, \rho_{EDN}, \rho_{CDN}$.

3.2. Identification strategy

As previously stated, the analysis requires a subset of variables to identify the model that: (i) explains maternal labor supply but does not directly affect a child's development nor usage of formal care; and (ii) affects the decision on whether to use formal care child centers and indirectly influence on maternal labor supply and on child's development. It is difficult to find such instruments because the dependent variables are strongly correlated and there are very few previous studies on this subject that account for endogeneity.

The existing literature suggests that maternal labor supply prior to pregnancy does not influence the child's development, as noted in Ruhm (2004). Given this, we use a dummy variable equal to 1 to indicate that the mother was employed before her pregnancy and 0 otherwise. We also consider specific employment rates for women by age and attained education, as suggested in Bernal (2008). These two instrumental variables (IV) are expected to affect maternal labor supply decision but are not thought to directly influence decisions regarding childcare or the child's development.

Regarding the decision on whether to use formal care centers, we elaborate two rates based on the information contained in the ECHs: the proportion of mothers that attended formal childcare centers when they were children; and the attendance rate in care centers for children aged 0 to 3 years old in 2012 and 2017, by gender and age. We speculate that these rates can give some insights of maternal preferences in relation to their own experience in preschool education, and on previous demands for formal childcare, which can influence on parental choices.

3.3. Alternative model specifications

In this study, we first consider whether maternal employment affects child development, and if the intensity of maternal employment has different effects on child development. Second, we explore the extent to which the timing of the mother's return to work affects early child development. At last, we explore the existence of compensatory effects for maternal employment according to types of alternative care arrangements.

To this end, we consider different model specifications. First, we estimate a base model regarding whether the mother decides to work or not, and whether she decides to use formal childcare. Then, maternal employment decisions are included as an independent variable affecting a child's probability of falling behind on development milestones (i.e.: communication, fine motor skills, gross motor skills, problem solving, personal-social). We run the system of equations presented below for each dimension of child development. As the dependent variables are dummies, the estimated equations used are probit models conditional on different sets of variables.

Second, we take into account the intensity of the maternal labor supply, i.e. if the mother decides not to be employed, to be employed in a part-time job, or employed in a full-time job. In this case, the maternal employment decision is modeled as an ordered probit.

Next, we specify a third model by considering whether the timing of maternal labor supply affects child development. Specifically, we consider whether the mother is employed after the child was born; that is when the child is aged 6, 12 and 24 months. In this case, we further restrict the sample to exclude all children aged 23 months or under.

In order to test the extent to which compensatory mechanisms could be affecting the household's joint decisions regarding maternal labor supply and the usage of formal childcare centers, and the impact of those decisions on child development, we extend the base model in two ways. First, we consider the father's involvement in childcare. We do so by alternatively adding a dummy variable indicating whether the father reports taking care of his child or not as a common explanatory variable to the equation system. We also control for the father's intensity of childcare, proxied by the logarithm of hours the father cares the child, plus one, in order to account for fathers not dedicating hours to childcare.

Second, as couples distribute household tasks differently it can, in turn, give insight as to whether roles are assigned within the couple related to childcare and labor supply. The last model includes the variables previously obtained by PCA referring to intrahousehold division of tasks, identifying households as cooperative-deconstructed, patriarchal, and cooperative-traditional; as common independent variables to the equation system.

4. Estimation results

First, we can observe that the correlation coefficients of the estimated system of seemingly unrelated equations with instrumental variables are statistically significant (Table A.3). The rejection of the “ignorability” of the null hypothesis of correlation, based on the Wald test, highlights the importance of the endogeneity of maternal employment decisions and the probability of the child being at risk of not reaching certain development milestones and the simultaneity between maternal employment and use of formal childcare (Table A.4)

Specifically, maternal employment and the decision to use a formal care center are positively and statistically correlated; that is, unobservable factors positively influencing the maternal labor participation decision also affect the decision to use a formal daycare center. Also, unobservable determinants of maternal employment are not correlated with any measure of child development. Therefore, including maternal employment decisions

in child development equations provides a direct effect of maternal employment. Overall, not accounting for the potential endogeneity resulting from unobserved heterogeneity would lead to biased results.

It is also worth noting that the instrumental variables chosen to identify the model are robust and statistically significant. Table A.5 shows that maternal employment prior to pregnancy is positively associated with maternal employment at the time of the survey, while the rate of formal childcare center attendance, calculated by child's age and gender in previous years of the surveys (2012 and 2017, for the cohorts 2013 and 2018 respectively), is positively correlated with using formal daycare for all the development dimensions considered.

In what follows, the main results are presented according to the objectives of this study.

4.1. Maternal employment and children's probability of being considered developmentally 'at risk'

Table 5 shows the average marginal effects (AMEs) of different measures of maternal employment on a child's probability of being considered 'at risk' in a given dimension of development. Panel A shows that when maternal employment is considered as a dummy variable, maternal employment increases the child's probability of demonstrating 'at risk' developmental markers in communication, fine and gross motor skills, and personal social behavior; however, it reduces the probability of the child's exhibiting 'at risk' markers in problem solving and socioemotional development. None of the estimated coefficients are statistically significant.

When we consider the intensive margin of maternal work (Panel B), –that is, whether the mother decides not to work, to work part or full-time–, we find that in contrast to previous findings, a mother's part-time and full-time employment reduce the probability of the child of being at risk in communication and personal-social development as compared to non-working mothers, although these effects are not statistically significant.

Overall, the mother's decision to work or not, or to work full time or part time, is not statistically significant in explaining the child's probability of being considered at risk in various dimensions of development.

Table 5. Impact of maternal employment on different measures of child development.
AME.

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Panel A. Maternal employment is dichotomous</i>						
Mother: Employed	0.012 (0.059)	0.053 (0.112)	0.093 (0.099)	-0.064 (0.073)	0.012 (0.083)	-0.003 (0.046)
<i>Panel B. Maternal employment is order-probit</i>						
Mother: Employed part-time	-0.018 (0.053)	0.043 (0.061)	0.034 (0.050)	-0.118 (0.069)	-0.059 (0.063)	-0.039 (0.043)
Mother: Employed full-time	-0.035 (0.095)	0.089 (0.127)	0.165 (0.110)	-0.121 (0.111)	-0.014 (0.116)	-0.052 (0.068)
<i>N</i>	949	949	949	949	949	949

4.2. Does the timing of maternal employment affect child development?

It is plausible that the impact of maternal employment and childcare on child development varies according to the child's age (Bernal and Keane, 2007; Bernal, 2008) and that the timing of a mother's return to work may be relevant (Blau and Grossberg, 1992). To consider this, we explore the impact of the timing of the mother's return to work for children aged 24 months and higher, by specifically taking into account whether the mother began working 6, 12, or 24 months after childbirth, or does not return at all.

Although in general terms the moment of entry into the labor market does not seem to affect child development, we observe effects on the risk of socio-emotional problems captured from the ASQ-SE (Table 6). Indeed, the risk of socio-emotional problems is reduced when the mother works at 12 months after childbirth, and also when working at both 6 and 12 months, as compared to mothers who were not working.

Table 6. Impact of the timing of mothers' return to work on child development.
Children aged 24 months and over. AME

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Maternal employment is dichotomous</i>						
Employed at time of survey	0.00727 (0.12)	0.0353 (0.22)	-0.00805 (-0.07)	-0.0116 (-0.15)	-0.00529 (-0.06)	-0.0240 (-0.21)
Employed at time of survey	0.0207 (0.31)	0.0643 (0.34)	-0.0343 (-0.24)	-0.0263 (-0.28)	0.0146 (0.17)	-0.0616 (-0.34)
Employed 6 mo. after child's birth	-0.0216 (-0.77)	-0.0794 (-1.51)	0.0198 (0.53)	-0.00202 (-0.05)	0.0225 (0.55)	-0.0175 (-0.42)
Employed at time of survey	0.0284 (0.45)	0.0447 (0.25)	-0.0347 (-0.25)	-0.0997 (-0.76)	-0.0412 (-0.30)	0.0863 (0.82)
Employed 12 mo. after child's birth	-0.0428 (-0.74)	-0.0248 (-0.22)	0.0114 (0.15)	0.0746 (0.99)	0.0336 (0.41)	-0.189* (-2.06)
Employed at time of survey	0.0344 (0.48)	0.0400 (0.17)	0 (.)	-0.116 (-0.80)	-0.00962 (-0.08)	0.0499 (0.37)
Employed 6 mo. but not 12 mo. child's birth	-0.00411 (-0.04)	-0.150 (-1.58)	0 (.)	-0.0404 (0.85)	0.0465 (0.51)	-0.113 (-0.77)
Employed 12 mo. but not 6 mo. child's birth	-0.0377 (-0.58)	-0.0133 (-0.10)	0 (.)	-0.0605 (-0.72)	0.0254 (0.31)	-0.211* (-2.25)
Employed 6 mo. and 12 mo. child's birth	-0.0552 (-0.88)	-0.0755 (-0.61)	0 (.)	0.0692 (0.83)	0.0421 (0.49)	-0.204* (-2.03)
N	388	388	388	388	388	388

* p<0.05, ** p<0.01, *** p<0.001

4.3. Intrahousehold decisions regarding childcare and division of tasks

As pointed out above, we consider the division of childcare and intra-household tasks in two ways: fathers' involvement in childcare (whether he cares his child or not, and its intensity); and different intra-household divisions of tasks according to the PCA analysis (types of households).

4.3.1. Fathers' involvement in childcare

First, we introduce the father's involvement on childcare and its effects on a child's development. We specifically consider whether the father takes part in childcare or not (Table 7), the intensity of childcare activities –that is, the hours the father spends with his child (Table 8). We find positive and significant effects of the father's involvement in childcare on the child's development of fine motor skills. This is observed for the

extensive and intensive margins of parental care, although the estimated coefficient becomes more statistically significant according to intensity; that is, the more hours the father spends with his child, the less likely the child is at risk of development in fine motor skills (Table 8). Also, when we consider the intensity of the mother's job (Panel B in Tables 7 and 8) together with paternal childcare, the results are consistent. We do not find statistically significant direct effects of paternal care on other domains of the child's development.

We also observe that, despite the mother's decision to work (Panel A in Tables Table 7 and Table 8), or the intensity of her employment (Panel A in Tables Table 7 and Table 8) not being statistically significant, comparisons between the estimated coefficients (Panel A in Tables Table 7 and Table 8 versus Panel A and B in Table 5) can nonetheless suggest that, when the father is involved in childcare and the mother is employed, the probability of the child being at risk of developmental delays decreases for communication and personal and social behavior (the estimated coefficients turn negative), gross motor skills and socioemotional development (for which the estimated coefficients are smaller than the reported in Table 5). This offers a plausible indication of a compensatory effect of paternal care for child development when the mother works.

Table 7. Impact of maternal employment on child development when fathers participate in childcare. AME.

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Panel A. Maternal employment is dichotomous</i>						
Mother: Employed	-0.007 (0.064)	0.070 (0.106)	0.020 (0.123)	-0.078 (0.081)	-0.015 (0.087)	-0.012 (0.048)
Father: Cares	0.072 (0.044)	-0.118* (0.056)	0.061 (0.063)	0.009 (0.045)	-0.002 (0.052)	-0.032 (0.034)
<i>Panel B. Maternal employment is order-probit</i>						
Employed part-time	-0.034 (0.061)	0.088 (0.055)	0.021 (0.062)	-0.141 (0.075)	-0.071 (0.071)	-0.032 (0.044)
Employed full-time	-0.068 (0.102)	0.146 (0.120)	0.146 (0.133)	-0.163 (0.119)	-0.026 (0.129)	-0.048 (0.071)
Father: Cares	0.090 (0.049)	-0.132* (0.054)	0.041 (0.062)	0.031 (0.048)	-0.000 (0.054)	-0.027 (0.036)
<i>N</i>	916	916	916	916	916	916

* p<0.05, ** p<0.01, *** p<0.001

Note: The number of observations is reduced due to missing data on fathers.

Table 8. Impact of maternal employment on child development when considering intensity of paternal care. AME.

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Panel A. Maternal employment is dichotomous</i>						
Mother: Employed	0.010 (0.061)	0.098 (0.096)	0.078 (0.111)	-0.081 (0.082)	-0.003 (0.085)	-0.014 (0.048)
Father: Cares (hs/wk)	0.007 (0.009)	-0.034** (0.012)	-0.008 (0.013)	-0.000 (0.010)	0.005 (0.012)	0.004 (0.009)
<i>Panel B. Maternal employment is order-probit</i>						
Mother: Employed part-time	-0.022 (0.057)	0.097 (0.053)	0.048 (0.056)	-0.139 (0.075)	-0.068 (0.070)	-0.037 (0.046)
Mother: Employed full-time	-0.048 (0.100)	0.169 (0.116)	0.204 (0.126)	-0.160 (0.119)	-0.017 (0.128)	-0.057 (0.073)
Father: Cares (hs/wk+1)	0.010 (0.010)	-0.036** (0.013)	-0.011 (0.013)	0.004 (0.010)	0.006 (0.012)	0.006 (0.010)
<i>N</i>	916	916	916	916	916	916

* p<0.05, ** p<0.01, *** p<0.001

Note: The number of observations is reduced due to fathers missing data.

It is worth noting that when the father gets involved in his child's care, the chances of the mother's participation in the labor market increases. Specifically, mothers are 17pp more likely to be employed if fathers are involved in childcare in comparison to households where the father is not involved; when the father's time devoted to the child increases by one hour, the mother's probability of employment increases by 3.5pp (Table A.9).

Indeed, the father's participation in childcare affects maternal employment intensity as it reduces the probability that the mother is employed in a part-time job (3.4 pp approximately) while increasing the probability of full-time employment (vis-a-vis not being employed). As previously observed, when the father dedicates an extra hour to his child the mother's probability of being employed in a full-time job increases by 4.1pp while reducing her probability of being in a part-time job by 7pp (Table A.9).

4.3.2. Intra-household division of tasks and child development

We next consider different intra-household arrangements regarding common household tasks. For this purpose, we re-estimate our base model including the three resulting variables obtained from the factorial analysis which broadly characterize households as cooperative-traditional, patriarchal, and cooperative-deconstructed. The AME reported in

Table 9 Panel A shows that, when considering maternal employment as a dichotomous variable, children from more cooperative-traditional households are 4.6pp less likely to

being at risk in fine motor skills acquisition; while those from more cooperative-deconstructed households are 2.9pp less likely to being at risk in personal-social skills.

When the model includes maternal employment intensity (Panel B), previous results remain and turn statistically significant at 95% confidence for cooperative traditional households; that is, children in this type of households are 5.5pp less likely of being considered 'at risk' in their development of fine motor skills.

Table 9. Impact of maternal employment on child development when considering household types. AME.

	<i>ASQ3: Communication</i>	<i>ASQ3: Fine motor skills</i>	<i>ASQ3: Gross motor skills</i>	<i>ASQ3: Problem solving</i>	<i>ASQ3: Personal- social</i>	<i>ASQ-SE</i>
<i>Panel A. Maternal employment is dichotomous</i>						
Mother: Employed	-0.001 (0.060)	0.037 (0.128)	0.081 (0.122)	-0.064 (0.074)	0.026 (0.086)	-0.020 (0.051)
HH: Cooperative-traditional	0.009 (0.011)	-0.046* (0.018)	-0.002 (0.018)	-0.010 (0.014)	0.015 (0.016)	0.009 (0.011)
HH: Patriarchal	0.001 (0.010)	-0.026 (0.015)	0.005 (0.015)	0.010 (0.012)	-0.004 (0.012)	-0.008 (0.009)
HH: Cooperative-deconstructed	-0.019 (0.011)	-0.014 (0.016)	-0.023 (0.015)	-0.007 (0.012)	-0.029* (0.014)	-0.014 (0.011)
<i>Panel B. Maternal employment is order-probit</i>						
Employed part-time	-0.010 (0.053)	0.046 (0.063)	0.053 (0.050)	-0.097 (0.068)	-0.046 (0.065)	-0.049 (0.047)
Employed full-time	-0.014 (0.102)	0.121 (0.136)	0.213 (0.114)	-0.085 (0.115)	0.018 (0.126)	-0.066 (0.073)
HH: Cooperative-traditional	0.011 (0.014)	-0.055** (0.021)	-0.017 (0.019)	-0.009 (0.017)	0.013 (0.019)	0.013 (0.013)
HH: Patriarchal	0.001 (0.010)	-0.026 (0.014)	0.004 (0.013)	0.009 (0.011)	-0.008 (0.012)	-0.009 (0.009)
HH: Cooperative-deconstructed	-0.019 (0.011)	-0.013 (0.017)	-0.023 (0.015)	-0.008 (0.012)	-0.030* (0.014)	-0.015 (0.011)
<i>N</i>	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

The way couples distribute household tasks also affects maternal employment decisions. For instance, the more cooperative-traditional households are, the more likely women decide to work (5.7pp). Conversely, the more patriarchal the households are, the less likely mothers are employed (2.7pp). In turn, we observe that in more cooperative traditional households, the probability of women being in full-time jobs increases almost 10pp while the probability of part-time maternal employment decreases 16pp (Table A.9).

5. Closing remarks

This study aimed to contribute to the existing literature on early maternal employment and children's probability of being considered at risk for delayed development by providing new evidence for a developing country. We built upon previous literature by exploring alternative household care arrangements that could compensate the loss of maternal care time for child development when mothers work. We also addressed causality of early maternal labor conditions on her child's probability of being at risk in several development dimensions by estimating seemingly unrelated equations with instrumental variables, therefore accounting for simultaneity in decisions regarding maternal employment and the usage of formal childcare centers. Furthermore, we explicitly accounted for co-habiting fathers' involvement in childcare and different arrangements of dividing household tasks and childcare.

Overall, our results stressed that fathers' involvement in childrearing and the various divisions of household tasks have positive effects on child development; while maternal employment does not affect the probability of the child to being considered at risk in various dimensions of development. Specifically, our first finding illustrates that neither a mother's decision to work nor the intensity of her job are statistically significant factors impacting her child development. The literature provides some plausible explanations: working mothers may be exchanging quantity of time for quality of time devoted to their children, as proposed by Hsin and Felfe (2014); maternal employment may generate extra household income that has a positive effect on child development (Blau and Grossberg, 1992; Colley and McPherran, 2013); and mothers may redistribute time across household tasks, child care, and leisure (Thévenon and Luci, 2012).

Our second set of results showed that the children of mothers who enter the labor market six months after childbirth and continue to be employed a year later are less likely to become at risk of socio-emotional problems. Mothers' reentry into the labor market a year after childbirth also had positive effects on child development. These results seem to be in line with the literature insofar as higher maternal income can foster child development. In turn, no statistically significant effects on child development are found for mothers employed six months after childbirth and not employed one year after her child was born. Conversely to previous findings in Thévenon and Luci (2012), we found that a very early maternal return to work did not negatively impact child development. This could be the case if, for instance, high quality formal childcare counterbalanced the loss of maternal care time.

One novelty of this study is its consideration of the key role of fathers' involvement in childrearing. On the one hand, and as stressed by the sociological literature, when fathers act as caretakers, they positively influence their children's development. On the other hand, paternal involvement in childcare also fosters maternal labor supply, increasing the probability that mothers are employed and are working full time, while reducing the probability of part-time employment.

Finally, we find that the type of arrangements co-habiting parents make regarding the distribution of household tasks and childcare affect child development. This finding is in line with results of Coley and McPherran (2013), and favors mothers' participation in the labor market.

In sum, the findings of this study support family policy designs that foster fathers' involvement in childrearing and that aim to foster gender equity and child development. As stated by Thévenon and Luci (2012), such policies involve a range of objectives: combating child and family poverty and promoting child development and well-being, reducing the associated costs of childrearing, promoting gender equality by helping families to better combine work and family responsibilities. Fostering more egalitarian intrahousehold division of unpaid work, specifically by encouraging fathers to participate in childrearing, would aid all objectives. Father's involvement in childcare facilitates higher female participation in the labor market, reduces gender gaps in unpaid work, all without increasing the risk of lags in child development, and even significantly reducing it in some dimensions.

In the short run, policies that foster fathers' spending time with their children increases paternal attachment and generates positive effects for child development (McMunn et al., 2015). Policies such as paternal leave can make progress towards this objective at while also fostering maternal labor participation. In this sense, there is existing evidence showing that paternal leave increases maternal labor participation (Farré and González, 2019).

In the long run, policies that successfully reconcile gender equality and child development are likely to stem primarily from changes in social norms and expectations that lead towards a more equal division of work within the home (Alon et al., 2020). Specifically, these policies aim to break the historical perspective of fathers as bread winners and mothers as primary caregivers, and seek to change cultural contexts in which an "intensive mothering" viewpoint prevails, understood as "the belief that mothers should spend large amounts of time caring for children and that mothers, in particular, are the ideal caregivers" (Hays, 1996; quoted in Raley et al., 2012). In this context, Raley et al. (2012) argue that women may want to maintain control of the quality of childcare, finding it difficult to give up control to other caregivers, even fathers. Therefore, policies influencing these behaviors and beliefs are desirable.

Finally, although this study specifically focused on co-habiting parents, our findings could also provide insights for policy recommendations that involve non-cohabiting parents who share childrearing responsibilities.

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Anexo

Table A.1: Means comparison between sampled and non-sampled households.

	<i>mean Out</i>	<i>mean InSmpl</i>	<i>Diff</i>	<i>t</i>	<i>p-value</i>
Cohort: 2018	0,35	0,61	-0,26	-14,93	0,000
Region: Montevideo	0,28	1,00	-0,72	-48,99	0,000
Father: In household	0,71	1,00	-0,29	-19,80	0,000
log(inc. per capita+1) w/o mother	8,51	8,94	-0,43	-6,01	0,000
Child					
Age (mo.)	23,70	22,39	1,30	2,85	0,004
Female	0,48	0,48	0,00	-0,19	0,846
Attends daycare	0,39	0,42	-0,04	-2,12	0,034
Attends daycare (hs/wk)	6,46	9,58	-3,12	-7,68	0,000
Mother					
Age (yr.)	28,73	32,28	-3,55	-14,39	0,000
Afro-descendant	0,16	0,14	0,01	0,91	0,364
Attained education					
9 yr. or less	0,59	0,33	0,26	14,57	0,000
10 - 12 yr.	0,21	0,20	0,02	1,07	0,283
More than 12 yr.	0,20	0,47	-0,27	-17,91	0,000
ASQ3: Communication	0,14	0,10	0,03	2,59	0,010
ASQ3: Fine motor skills	0,27	0,22	0,05	2,75	0,006
ASQ3: Gross motor skills	0,18	0,17	0,01	0,50	0,618
ASQ3: Problem-solving	0,21	0,15	0,06	3,76	0,000
ASQ3: Social-personal	0,19	0,16	0,03	1,85	0,065
ASQ-SE	0,16	0,09	0,06	4,61	0,000
Employed	0,61	0,71	-0,10	-5,64	0,000
Empl. when pregnant	0,54	0,72	-0,19	-10,67	0,000
Empl. 6m after childbirth	0,32	0,53	-0,21	-12,48	0,000

Table A.2. Maternal employment over child's age (full sample)

	<i>Mean</i>	<i>Std. Error</i>	<i>[95% CI]</i>	
Employment rate				
age==0	0,7395	0,0300	0,6807	0,7984
age==1	0,6754	0,0269	0,6227	0,7281
age==2	0,7294	0,0279	0,6747	0,7841
age==3	0,6839	0,0353	0,6145	0,7533

Table A.3. Athanrho of the Seemingly Unrelated Equations base model

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Athanrho 12 (Child development # Maternal employment)</i>						
Constant	0.070 (0.196)	-.107 (0.218)	-.442 (0.287)	-.028 (0.180)	-.085 (0.236)	-.114 (0.190)
<i>Athanrho 13 (Child development # Daycare attendance)</i>						
Constant	0.065 (0.088)	-0.032 (0.071)	-0.164* (0.075)	-0.177** (0.077)	-0.009 (0.079)	-0.138 (0.084)
<i>Athanrho 23 (Maternal employment # Daycare attendance)</i>						
Constant	0.228*** (0.075)	0.234*** (0.075)	0.234*** (0.074)	0.231*** (0.074)	0.229*** (0.074)	0.231*** (0.075)
N	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

Table A.4. Wald test results

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>SUR equations base model</i>						
Wald test statistic	10.64	9.89	13.01	15.36	9.78	11.29
p-value	.0138	.0196	.0046	.0015	.0205	.0102
N	949	949	949	949	949	949

Table A.5. Instrumental Variables coefficient in SUR equations base model. AME.

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Model (1): Maternal employment equation. Maternal employment and daycare attendance are dichotomous</i>						
Mother: Empl. before preg.	1.047*** (0.134)	1.041*** (0.135)	1.032*** (0.137)	1.043*** (0.137)	1.041*** (0.136)	1.038*** (0.136)
<i>Model (1): Daycare attendance equation. Maternal employment and daycare attendance are dichotomous</i>						
Preschool att. rate previous yr. by child age and sex	1.985** (0.728)	1.976** (0.729)	1.996** (0.732)	1.934** (0.729)	1.976** (0.730)	1.957** (0.729)
N	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

Table A.6. Base model: Child development marginal effects

	ASQ3: Communication	ASQ3: Fine motor skills	ASQ3: Gross motor skills	ASQ3: Problem solving	ASQ3: Personal- social	ASQ-SE
<i>Child</i>						
Female	-0.065*** (0.019)	-0.047 (0.028)	0.013 (0.026)	-0.040 (0.023)	-0.025 (0.025)	0.002 (0.018)
Age (mo.)	-0.001 (0.001)	-0.001 (0.001)	-0.009*** (0.001)	-0.001 (0.001)	-0.005*** (0.001)	0.002** (0.001)
Premature	0.046 (0.036)	0.042 (0.061)	0.011 (0.058)	-0.108* (0.054)	0.044 (0.053)	-0.003 (0.041)
Low birth-weight	0.022 (0.040)	0.086 (0.067)	0.011 (0.064)	0.183*** (0.055)	0.054 (0.057)	-0.019 (0.044)
<i>Mother</i>						
Age (yr.)	-0.001 (0.002)	-0.004 (0.003)	0.003 (0.003)	-0.001 (0.002)	0.003 (0.002)	-0.004 (0.002)
Afro-descendant	0.018 (0.031)	-0.024 (0.041)	-0.035 (0.039)	-0.016 (0.033)	-0.016 (0.038)	0.021 (0.023)
Education (Omitted: 9 yr. or less)						
10 to 12 yr	-0.019 (0.030)	0.025 (0.043)	-0.043 (0.041)	0.000 (0.034)	0.014 (0.038)	0.027 (0.027)
More than 12 yr.	-0.017 (0.032)	-0.009 (0.050)	-0.071 (0.051)	0.011 (0.036)	0.039 (0.043)	-0.012 (0.026)
log(inc+) w/o mother	0.005 (0.006)	-0.007 (0.008)	-0.018* (0.008)	0.001 (0.007)	0.014 (0.008)	0.005 (0.005)
Cohort: 2018	0.053* (0.022)	0.034 (0.033)	0.010 (0.031)	0.004 (0.025)	0.067* (0.028)	0.080*** (0.022)
<i>Big Five:</i>						
Extraversion	-0.012 (0.014)	-0.019 (0.020)	0.013 (0.019)	-0.006 (0.016)	0.013 (0.016)	0.002 (0.011)
Agreeableness	-0.004 (0.016)	0.002 (0.029)	-0.007 (0.027)	-0.003 (0.021)	0.016 (0.026)	-0.009 (0.017)
Conscientiousness	0.018 (0.017)	-0.013 (0.027)	-0.028 (0.025)	0.023 (0.020)	-0.005 (0.023)	-0.045** (0.017)
Neuroticism	-0.010 (0.011)	-0.002 (0.018)	-0.031 (0.017)	0.002 (0.014)	0.027 (0.016)	0.021 (0.011)
Openness	-0.019 (0.014)	-0.016 (0.022)	0.007 (0.022)	-0.015 (0.016)	-0.069*** (0.019)	0.000 (0.012)
Employed	0.012 (0.059)	0.053 (0.112)	0.093 (0.099)	-0.064 (0.073)	0.012 (0.083)	-0.003 (0.046)
<i>N</i>	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

Table A.7. Base Model: Maternal employment equation

	Communication	Fine motor skills	Gross motor skills	Problem solving	Personal-social	ASQ-SE
<i>Child:</i>						
Female	0.026 (0.025)	0.025 (0.025)	0.026 (0.025)	0.026 (0.025)	0.026 (0.025)	0.026 (0.025)
Age (mo.)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)
Premature	-0.044 (0.061)	-0.044 (0.061)	-0.045 (0.061)	-0.047 (0.062)	-0.044 (0.061)	-0.044 (0.061)
Low birthweight	-0.012 (0.070)	-0.012 (0.069)	-0.011 (0.069)	-0.007 (0.072)	-0.012 (0.070)	-0.012 (0.070)
<i>Mother:</i>						
Age (yr.)	0.006* (0.002)	0.006* (0.002)	0.006* (0.002)	0.006* (0.002)	0.006* (0.002)	0.006* (0.002)
Afro-descendant	-0.032 (0.036)	-0.033 (0.036)	-0.034 (0.036)	-0.032 (0.036)	-0.032 (0.036)	-0.033 (0.036)
Education (Omitted: 9 yr. or less)	0.000	0.000	0.000	0.000	0.000	0.000
10 to 12 yr.	0.078 (0.045)	0.080 (0.045)	0.080 (0.045)	0.077 (0.045)	0.078 (0.045)	0.078 (0.045)
More than 12 yr.	0.246*** (0.042)	0.246*** (0.042)	0.245*** (0.041)	0.246*** (0.041)	0.245*** (0.042)	0.246*** (0.042)
log(inc) w/o mother	0.011 (0.007)	0.011 (0.007)	0.011 (0.007)	0.011 (0.007)	0.011 (0.007)	0.011 (0.007)
Cohort: 2018	0.046 (0.028)	0.045 (0.028)	0.046 (0.028)	0.046 (0.028)	0.046 (0.029)	0.046 (0.029)
<i>Big Five:</i>						
Extraversion	0.012 (0.018)	0.011 (0.018)	0.012 (0.017)	0.012 (0.018)	0.012 (0.018)	0.012 (0.018)
Agreeableness	0.044 (0.024)	0.045 (0.024)	0.042 (0.024)	0.044 (0.024)	0.044 (0.024)	0.044 (0.024)
Conscientiousness	0.021 (0.024)	0.022 (0.024)	0.020 (0.024)	0.022 (0.024)	0.021 (0.024)	0.021 (0.024)
Neuroticism	-0.028 (0.016)	-0.028 (0.016)	-0.028 (0.016)	-0.027 (0.017)	-0.028 (0.017)	-0.028 (0.017)
Openness	-0.032 (0.019)	-0.032 (0.019)	-0.031 (0.019)	-0.032 (0.019)	-0.032 (0.019)	-0.032 (0.019)
Employed before pregnancy	0.251*** (0.028)	0.250*** (0.028)	0.250*** (0.028)	0.252*** (0.028)	0.251*** (0.028)	0.251*** (0.028)
<i>N</i>	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

Table A.8. Base Model: Daycare attendance equation

	Communication	Fine motor skills	Gross motor skills	Problem solving	Personal-social	ASQ-SE
<i>Child:</i>						
Female	0.019 (0.028)	0.019 (0.028)	0.018 (0.028)	0.019 (0.028)	0.019 (0.028)	0.018 (0.028)
Age (mo.)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)
Premature	-0.050 (0.066)	-0.049 (0.066)	-0.047 (0.066)	-0.048 (0.066)	-0.050 (0.066)	-0.048 (0.066)
Low birthweight	0.018 (0.079)	0.018 (0.079)	0.018 (0.079)	0.017 (0.079)	0.018 (0.079)	0.017 (0.079)
<i>Mother:</i>						
Age (yr.)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)	-0.000 (0.003)
Afro-descendant	0.021 (0.048)	0.022 (0.048)	0.022 (0.048)	0.021 (0.048)	0.022 (0.048)	0.022 (0.048)
Education (Omitted: 9 yr. or less)						
10 to 12 yr.	-0.006 (0.040)	-0.007 (0.040)	-0.007 (0.040)	-0.007 (0.040)	-0.006 (0.040)	-0.006 (0.040)
More than 12 yr.	0.122** (0.038)	0.121** (0.038)	0.121** (0.038)	0.120** (0.039)	0.122** (0.038)	0.121** (0.038)
log(inc) w/o mother	-0.000 (0.009)	-0.000 (0.009)	-0.000 (0.009)	-0.000 (0.009)	-0.000 (0.009)	-0.000 (0.009)
Cohort: 2018	0.110*** (0.032)	0.110*** (0.032)	0.110*** (0.032)	0.110*** (0.032)	0.110*** (0.032)	0.111*** (0.032)
<i>Big Five:</i>						
Extraversion	0.039* (0.019)	0.039* (0.019)	0.039* (0.019)	0.039* (0.019)	0.039* (0.019)	0.039* (0.019)
Agreeableness	0.036 (0.026)	0.036 (0.026)	0.036 (0.026)	0.038 (0.026)	0.036 (0.026)	0.036 (0.026)
Conscientiousness	-0.024 (0.025)	-0.024 (0.025)	-0.023 (0.025)	-0.025 (0.025)	-0.024 (0.025)	-0.024 (0.025)
Neuroticism	0.002 (0.017)	0.002 (0.017)	0.001 (0.017)	0.001 (0.017)	0.002 (0.017)	0.002 (0.017)
Openness	-0.006 (0.021)	-0.006 (0.021)	-0.007 (0.021)	-0.006 (0.021)	-0.006 (0.021)	-0.006 (0.021)
Preschool att. rate previous yr. by child age and sex	0.570** (0.211)	0.572** (0.212)	0.576** (0.212)	0.563** (0.212)	0.570** (0.212)	0.565** (0.212)
N	949	949	949	949	949	949

* p<0.05, ** p<0.01, *** p<0.001

Table A.9. paternal care and household type on maternal employment. AME

	Communication	Fine motor skills	Gross motor skills	Problem solving	Personal-social	ASQ-SE
<i>(1) Probability of mothers' being employed (probit)</i>						
<i>(1.1) Father childcare is dichotomous</i>						
Father: Cares	0.172*** (0.044)	0.172*** (0.044)	0.172*** (0.044)	0.173*** (0.044)	0.174*** (0.044)	0.173*** (0.044)
<i>(1.2) Father childcare is continuous</i>						
Father: Cares log(hs/wk +1)	0.035*** (0.010)	0.036*** (0.010)	0.036*** (0.010)	0.036*** (0.010)	0.035*** (0.010)	0.036*** (0.010)
<i>(1.3) Household types</i>						
HH: Cooperative-traditional	0.057*** (0.014)	0.057*** (0.014)	0.057*** (0.014)	0.057*** (0.014)	0.057*** (0.014)	0.057*** (0.014)
HH: Patriarchal	-0.027* (0.012)	-0.027* (0.012)	-0.026* (0.012)	-0.027* (0.012)	-0.027* (0.012)	-0.028* (0.013)
HH: Cooperative-deconstructed	-0.011 (0.016)	-0.011 (0.016)	-0.012 (0.016)	-0.011 (0.016)	-0.011 (0.016)	-0.011 (0.016)
<i>(2) Probability of mothers' being employed part-time (order probit)</i>						
<i>(2.1) Father childcare is dichotomous</i>						
Father: Cares	-0.034** (0.011)	-0.034** (0.011)	-0.034** (0.011)	-0.035** (0.011)	-0.035** (0.011)	-0.035** (0.011)
<i>(2.2) Father childcare is continuous</i>						
Father: Cares log(hs/wk +1)	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)	-0.007** (0.002)
<i>(2.3) Household types</i>						
HH: Cooperative-traditional	-0.016*** (0.004)	-0.016*** (0.004)	-0.016*** (0.004)	-0.016*** (0.004)	-0.016*** (0.004)	-0.016*** (0.004)
HH: Patriarchal	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
HH: Cooperative-deconstructed	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	0.002 (0.002)
<i>(3) Probability mothers' being employed full-time (order probit)</i>						
<i>(3.1) Father childcare is dichotomous</i>						
Father: Cares	0.209*** (0.053)	0.208*** (0.052)	0.208*** (0.053)	0.214*** (0.053)	0.212*** (0.053)	0.212*** (0.053)
<i>(3.2) Father childcare is continuous</i>						
Father: Cares log(hs/wk +1)	0.041*** (0.011)	0.042*** (0.011)	0.042*** (0.011)	0.042*** (0.011)	0.041*** (0.011)	0.042*** (0.011)
<i>(3.3) Household types</i>						

HH: Cooperative-traditional	0.097*** (0.015)	0.098*** (0.015)	0.098*** (0.015)	0.097*** (0.015)	0.097*** (0.015)	0.098*** (0.015)
HH: Patriarchal	-0.010 (0.013)	-0.010 (0.013)	-0.010 (0.013)	-0.010 (0.013)	-0.010 (0.013)	-0.010 (0.013)
HH: Cooperative-deconstructed	-0.009 (0.015)	-0.009 (0.015)	-0.011 (0.015)	-0.010 (0.015)	-0.009 (0.015)	-0.009 (0.015)
<i>N</i>	916	916	916	916	916	916

* p<0.05, ** p<0.01, *** p<0.001

Table A.10 paternal care and household type on daycare attendance. AME

	Communication	Fine motor skills	Gross motor skills	Problem solving	Personal-social	ASQ-SE
<i>(1) Probability of attending daycare (maternal employment is dichotomous)</i>						
<i>(1.1) Father childcare is dichotomous</i>						
Father: Cares	0.145** (0.056)	0.145** (0.056)	0.143* (0.056)	0.149** (0.056)	0.146** (0.056)	0.144** (0.056)
<i>(1.2) Father childcare is continuous</i>						
Father: Cares log(hs/wk +1)	0.018 (0.012)	0.018 (0.012)	0.018 (0.012)	0.019 (0.012)	0.018 (0.012)	0.018 (0.012)
<i>(1.3) Household types</i>						
HH: Cooperative-traditional	0.015 (0.017)	0.015 (0.017)	0.015 (0.017)	0.015 (0.017)	0.015 (0.017)	0.015 (0.017)
HH: Patriarchal	-0.016 (0.015)	-0.016 (0.015)	-0.016 (0.015)	-0.016 (0.015)	-0.016 (0.015)	-0.017 (0.015)
HH: Cooperative-deconstructed	0.027 (0.016)	0.026 (0.016)	0.026 (0.016)	0.026 (0.016)	0.026 (0.016)	0.027 (0.016)
<i>(2) Probability of attending daycare (maternal employment is order probit)</i>						
<i>(2.1) Father childcare is dichotomous</i>						
Father: Cares	0.143** (0.056)	0.144** (0.056)	0.141* (0.056)	0.148** (0.056)	0.144** (0.056)	0.143** (0.055)
<i>(2.2) Father childcare is continuous</i>						
Father: Cares log(hs/wk +1)	0.019 (0.012)	0.019 (0.012)	0.019 (0.012)	0.019 (0.012)	0.019 (0.012)	0.019 (0.012)
<i>(2.3) Household types</i>						
HH: Cooperative-traditional	0.015 (0.017)	0.014 (0.017)	0.014 (0.017)	0.014 (0.017)	0.014 (0.017)	0.014 (0.017)
HH: Patriarchal	-0.016 (0.015)	-0.017 (0.015)	-0.016 (0.015)	-0.016 (0.015)	-0.016 (0.015)	-0.017 (0.015)
HH: Cooperative-deconstructed	0.026 (0.016)	0.026 (0.016)	0.025 (0.016)	0.025 (0.016)	0.026 (0.016)	0.026 (0.016)
<i>N</i>	916	916	916	916	916	916

* p<0.05, ** p<0.01, *** p<0.001

Table A.11. Factor analysis scores for household types

	<i>HH: Cooperative- traditional</i>	<i>HH: Patriarchal</i>	<i>HH: Cooperative- deconstructed</i>
Preparing daily meals	0.11	0.18	-0.32
Shopping for groceries	0.10	0.49	-0.21
Cleaning and tidying the house	0.14	-0.06	-0.28
Making small home repairs	0.01	0.27	0.60
Paying bills	0.06	0.48	-0.09
Bathing and grooming the children	0.19	-0.22	-0.03
Taking children to the bathroom	0.21	-0.17	0.04
Changing the children's diapers	0.20	-0.19	0.04
Feeding children or see to it that they eat	0.18	-0.11	0.11
Disciplining children when they misbehave	0.11	0.10	0.31
Taking children to and from school or kindergarten	0.14	0.15	0.06
Taking children to the doctor	0.16	0.06	-0.17
Playing with children or doing recreational activities with them	0.13	0.04	0.37