

**Girls' Domestic and Care Work in Brazil: Educational Consequences and Connections to Mothers' Work**

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Abstract

Girls' contribution to their households primarily takes the form of household production—unpaid domestic chores and childcare. Yet, from a policy perspective, domestic work is seldom considered child labor, while comparatively, little academic research has investigated its consequences on later socioeconomic outcomes. Using nationally-representative data from Brazil, this paper addresses girls' unpaid domestic and care labor within their own families and its connection with mothers' labor participation. Our preliminary findings suggest that domestic and care work has a detrimental impact in educational attainment of Brazilian girls, particularly among those from disadvantaged backgrounds, and this effect is net of household income and parental education, among other relevant factors. Supporting a substitution effect argument, mothers' work intensity is positively associated with girls' unpaid household work. Yet, this association varies by socioeconomic strata, being stronger for girls from disadvantaged families.

Keywords: unpaid domestic work; gender; adolescents; household labor; Brazil; Latin America.

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## Introduction

The determinants and consequences of adolescents' work for pay have received considerable attention from academic research and policy makers, mainly with a focus on developing countries. Yet, relatively little research has addressed activities of domestic and care work conducted by children and adolescents in their own households. At the same time, evidence from multiple contexts suggest that girls do more family work than their male siblings (Gager and Sanchez 2004, Assaad et al. 2010, among others). In fact, globally, girls' work tends to be concentrated on household labor and child care, in opposition to market labor (Zapata et al. 2010, among others). Thus, since limited to only market-based employment, the common definition of child and adolescent labor ignores all forms of house work and care work, and this decision is highly gendered (Asaad et al. 2010, Levison and Moe 1998)<sup>1</sup>. Focusing on Brazil, this project investigates the unpaid domestic and care work conducted by female adolescents at home, with their own families. We address three research questions: what is the connection between mothers' work for pay and daughters' domestic and care work? Does this relationship vary across socioeconomic strata? And, does girls' domestic and care work influence school outcomes? We present preliminary results using nationally-representative data from the Pesquisa Nacional por Amostra a Domicilio (PNAD), gathered on annual basis by the Brazilian Census Bureau, between 2002-2015.

Understandably, the rich body of research on children and adolescent (market) labor has prioritized its connections to educational attainment, with most of evidence supporting a negative association between these two factors (Post and Pong 2000, Ravallion and Wodon 2000, among

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<sup>1</sup> The few scholars who have analyzed girls' domestic and care work within their own households also point out to the fact that the distinction between market labor and domestic & care labor is arbitrary. For instance, cooking in a food stand or street market is considered labor, while performing the same activity is not (Asaad et al. 2010, Levison and Moe 2000).

others)<sup>2</sup>. Plausibly, time and energy spend by girls on domestic and care work may also play a role at explaining their overall educational achievement. For certain contexts, the number of hours girls devote to household production is not trivial. In our own data, Brazilian girls 13-18 years old spend an average of about 13 weekly hours in house work and care work. As a point of reference, most of students in this country attend school for 4 hours per day, 20 hours per week (OECD 2011).

Furthermore, we argue that family domestic chores conducted by girls in their own households are a factor of importance within an overall interest on the reproduction of gender inequality. Scholarly research has firmly established the importance of domestic and (mainly) care work at explaining broader gender inequalities in the labor market. This line of work has contributed with important insights on motherhood penalties and power dynamics within couples (Kuhhirt and Ludwig 2012, Komter 1989). Research has demonstrated that, despite some progress, gender norms governing divisions of household labor remain deeply entrenched (Miller and Carlson 2016). Further, while researchers acknowledge the role of socialization at explaining later disparities, the bulk of this body of literature has concentrated on the adults in the family (Raley and Bianchi 2006). The study of girls' domestic and care work within their families of origin could provide with useful context to the analysis of later patterns of traditional household specialization (Cunningham 2001). These patterns, in turn, have been shown critical to a broader interest on gendered disadvantage, particularly in the labor market.

Similarly, family duties of housework and care are clearly connected with essentialist notions of gender differences that tie women to caretaking and nurturance in the workplace. The notion that women are naturally-better-suited to house chores and care work (Brines 1994,

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<sup>2</sup> Some studies have found a less clear or even complementary relationship between child work for pay and school in certain contexts (for Peru: Patrinos and Psacharopoulos 1997). Yet, most studies find a negative association.

Ridgeway and Correll 2004) contributes to the devaluation of female-dominated occupations. As known, traditional female occupations are characterized by low levels of prestige and compensation, while sex traditional employment is a major source of economic sex inequality (Kmec 2005). Plausibly, early socialization of girls and adolescents into unpaid responsibilities of housework and care have an influence in women's later occupational placements. In Latin America, domestic work -largely low-status and poorly paid- is the modal occupation for women. Moreover, among the highly-educated, women are importantly concentrated in teaching and nursing, both occupations where salaries are lower than for other high-skilled workers (ILO 2012).

We investigate girls' domestic work in a context of particular interest. A middle-income country with the largest population in Latin America, Brazil has made notable progress towards gender equality in the past few decades. The gender gap in education was closed in the 1980s and reversed by the 2000s, with Brazilian women having in average of more years of education than men (Beltrao and Alvez 2009). Female labor force participation in Brazil is above the Latin American average, at around 58 percent (ILO 2012), similar than in the United States, while the current birth rate is even below-replacement. These characteristics are aligned with higher investments in the human capital of Brazilian girls. Yet, at the same time, domestic production is decidedly gendered (Pineiro et al. 2016). Moreover, rates of teenage childbearing are high even within the context of the Latin American region, as well as the proportion of girls who start a marital union during their adolescence (UNFPA 2012). As known, both teenage childbearing and early unions are associated with negative socioeconomic outcomes later in life. The latter factors underscore the importance of investigating the overall context in which Brazilian girls accumulate human capital and develop key notions on gender roles.

This document is organized as follows. In the first section we discuss theoretical frameworks useful to the study of girls' domestic work. It is followed by a discussion of the connection between daughters' unpaid work. The third section introduces the data and our initial methodological approach. We then present our results, and subsequently discuss conclusions and implications of the study. This is an ongoing project, as we plan to include additional methodological strategies to our analysis.

### **Girls and Domestic Work**

As several other Latin American countries, Brazil has made substantial progress at reducing rates of child labor in the past few decades. Between 2005 and 2015, the proportion of children 12-15 engaged in market-oriented labor fell from 15 percent to 6 percent<sup>3</sup>. Globally-praised anti-poverty programs in the country prioritized the reduction of child labor by tying family grants to children's school enrollment and attendance, with important success (Alvez de Araújo 2014)<sup>4</sup>. Indeed, this is good news for the country, particularly in the light of evidence that connects child labor to low educational attainment (Post and Pong 2000, among others). Impressive and important though this is, this approach fails to consider family unpaid work conducted by children and adolescents. Similarly, the substantial body of academic research on children's contribution to their households seldom includes family work. Given boys are more likely to participate in

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<sup>3</sup> Own calculations using the Pesquisa Nacional por Amostra a Domicílio (PNAD). Similarly, according to the official reports, child and adolescent labor fell from 26.3 percent in 1992 to 9.6 in 2008.

<sup>4</sup> Particularly, in the rural areas and through the Conditional Cash Transfer program 'Bolsa Familia'. *The Economist*. July 29<sup>th</sup>, 2010.

market-oriented work while girls participate mainly in domestic and care chores at home, this distinction is strongly gendered<sup>5</sup> (Levinson and Moe 2000).

Yet, while research from industrial countries reports moderately low hours spent by adolescents in house chores and care (Coltrane 2000), domestic tasks can be extremely time consuming in other contexts. Using data from Peru in the 1980s, Levison and Moe document a minimal amount of work-for-pay conducted by girls and adolescents, but about 15 weekly hours in unpaid family work for 13-year-old girls, with the time allocated increasing steadily with age (Levison and Moe 1998). In our analytical sample for contemporary Brazil, about 28 percent of adolescent girls allocate about the same number of weekly hours to unpaid family work than to school, or more (20 hours). As market-oriented labor has been found detrimental to boys' schooling in several contexts, we anticipate the time and energy girls spend on domestic chores and care work at home will negatively affect their educational attainment.

Furthermore, the routine work on domestic chores and care during girls' formative years may have an overall impact as a mechanism for the reproduction of gender inequality. Thus, previous research suggests that early socialization plays a role at explaining gendered preferences and behavior later in life, particularly in terms of household labor allocation (Cunningham 2001, Raley and Bianchi 2006). Interestingly, the persistence of gendered divisions of household and care labor have received substantial attention from sociologists (Craig and Mullan 2011, Miller and Carlson 2016, among others), although this body of research has largely focused on adults. Further, research has demonstrated the importance of household labor to explain later socioeconomic outcomes, mainly in the labor market. For instance, given women are still

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<sup>5</sup> Among Brazilians 13-18 years old, above 80 percent of girls report at least 1 hour of housework or care work in the week of reference, versus less than 20 percent for boys. Own calculations based on PNAD, 2002-2015.

responsible for the bulk of house chores and care work, the motherhood penalty could be at least partially explained by mothers having less energy to spend in paid employment (Becker 1991, Budig and England 2001, Kuhhirt and Ludwig 2012). Researchers have also analyzed household work as a key arena in which gendered dynamics of power are enacted (Miller and Carlson 2016; Komter 1989). Domestic labor is trivialized in the popular imagination (Coltrane 2000), so higher shares of family work -especially house chores- tend to be associated with a lower status within the couple (Miller and Carlson 2016). That is, research has established that household labor allocation among adults persists as highly gendered, and that such disparities are consequential for women's long-term socioeconomic outcomes. Plausibly, girls' everyday work on domestic chores and care may contribute to the reproduction of hegemonic gender ideals about the appropriate distribution of family work later in the life course.

Moreover, through routine household work during the childhood and adolescence, girls gain skill in activities associated to domestic work and care (Levison and Moe 1998). In other words, girls' socialization into home production is likely associated to later gender specialization in market versus non-market work. While female rates of labor force participation in Brazil are comparable to those of the United States, gender specialization is pervasive even when both spouses are employed full-time (Hook 2010). Domestic skills developed by girls at early age may have an impact on work-related decisions and *preferences* that favor the family sphere versus market-oriented work later in life. Further, since knowledge and skills associated to household production are socially devalued, these learning processes contribute to larger gender disparities.

We believe the impact of domestic and care work through gender socialization could be particularly important for the Brazilian context for at least 2 reasons. First, Brazilian rates of

teenage childbearing and early union are higher than expected<sup>6</sup> (UNFPA 2012) and are strongly concentrated among disadvantaged youth (Marteleto and Villanueva 2018<sup>7</sup>). This highlights the importance of studying the family circumstances of adolescent girls. Qualitative research for Latin America has found that educational underachievement often *precedes* adolescent childbearing (Naslund-Hadley and Binstock 2010). If unpaid girls' domestic work is associated with negative educational outcomes, it could also have an indirect effect on early fertility. By contributing to an overall context of little opportunity, where adolescents see pregnancy as a way to accelerate their life trajectory, domestic responsibilities with their families of origin may play a role at explaining adolescents' resort towards motherhood and cohabitation. Second, despite recent improvements, Brazil remains one of the most unequal countries in the world. Since girls in disadvantaged families have higher unpaid household responsibilities than their more-privileged peers, a cumulative effect of this labor could translate into larger disparities across social strata.

### **Girls' Work and Mothers' Work**

We investigate girls' domestic and care work in connection to mothers' paid employment since the latter is likely to impose constraints to girls' time use. Following the *time availability* perspective, parents' work for pay is predicted to reduce their availability for household labor and increase the time children allocate to these tasks (Holland 1991, Gager and Sanchez 2009). Given the gendered-pattern of domestic labor, daughters are expected to pick up the slack at home (Blair 1992). While it could be argued that mothers' participation in the paid labor force reflects more-egalitarian gender role attitudes (Cunningham 2001), this connection may be less salient in a

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<sup>6</sup> According to UNFPA, Brazil ranks fourth in the Latin American region in the number of marital unions under age 18, and persists as one of the 40 countries in the world where the prevalence of early marriage is 30 percent or more (United Nations Population Fund, 2012).

<sup>7</sup> Unpublished manuscript, available upon request and under review at *Studies in Family Planning*.



context such as Brazil, with high female labor force participation and a substantial concentration of women in precarious jobs (ILO 2012).

Furthermore, a *substitution* effect, from an economic perspective, would also be aligned with increased household labor from girls associated with mothers' longer hours in paid work. Following a substitution framework, individuals whose employment opportunities have improved would work more, as their value in the labor market increases, while other family members may reduce their hours in paid employment (Degraff et al. 2009, Coltrane 2000). For our topic of interest<sup>8</sup>, the presence of an adolescent daughter may be counted as an 'improvement' in the employment opportunities of a mother, since her daughter can assume house chores and care responsibilities at home. Thus, we expect daughters' allocation of household work will be positively associated to mothers' paid work intensity.

Additionally, we expect the noted connection to vary across socioeconomic strata. First, household and care labor may be more time-consuming among working-class families, due to factors such as lack of access to appliances or appropriate housing conditions. Second, more-advantaged families have greater access to outsourcing household labor, and, consequently, are likely to have a lower need for daughters' unpaid household work. These two factors would predict that the association between mothers' work intensity and daughters' unpaid family work will be stronger among working-class families.

### Study design

*Data.* We draw on data from the Brazilian Nacional Household Sample Survey (PNAD) from 2002 to 2015. PNAD, conducted on annual bases, is the most-used source of socioeconomic research

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<sup>8</sup> When analyzing market-oriented child labor, a substitution perspective would predict that better opportunities for women's work for pay would be *negatively* associated to children's work.

for Brazil. The survey is nationally-representative, probability-based, stratified, multistage and carried out by the Brazilian Census Bureau.

*Sample* As previous research indicate that household division of labor becomes increasingly gendered as children reach adolescence, (Levison and Moe 1998), we limit our sample to girls identified as children of the household head aged 13 to 18 years old (N= 210,270). That is, we exclude girls who are domestic workers, renters, or unrelated to the household head.

### Measures

The PNAD uses the same questions to inquire respondents about their time allocation on *unpaid domestic chores and care work* within their households. Individuals 10 and older were asked whether they performed any domestic or care work on the week of reference. Those who responded affirmatively, were asked how many weekly hours, on average, they spend on such activities. Using these questions, we constructed 3 measures for girls' domestic and care work, tested our models with all of them and obtained substantially similar results. Specifically, our measures for girls' domestic and care work are the following (a) a binary one were 1 indicates the girl has performed at least 1 hour of domestic or care work and 0 otherwise; (b) a continuous measure referring to the number of hours reported, ranging from 0 to 98; (c) a binary one were 1 indicates the girl has performed at least 15 hours of domestic or care work and 0 indicates either 14 or fewer weekly hours in household work (Levison and Moe 2001<sup>9</sup>). It is worth noting that scholarly research on use of time has found that self-reported information on time allocation from children is reliable (Ben-Arieh & Ofir 2002).

*Mothers' work intensity* was measured with a dichotomous variable were 1 indicates 35 or more hours in paid work, and 0 refers to either fewer hours in paid work or no work for pay. The threshold of 35 hours was selected to reflect regular school hours in Brazil. As noted, daily school hours in this country tend to be low (about 20 per week), a factor that plausibly constrains mothers' ability to work for pay (Holland et al. 2015). Alternative measures produced substantially similar results those presented here.

Additional controls include *educational attainment of the household head*, coded with a 4-category measure ranging from "elementary school incomplete" to "high school complete and

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<sup>9</sup> Assaad and colleagues use a similar threshold, of 14 weekly hours (Assaad et al. 2010).

more” and racial minority (1=non-white). We further control for school enrollment (0/1), since girls out of school are expected to allocate more time in household duties. We include an indicator for whether the mother has a partner or not (0/1); for the presence of *siblings ages 9 and younger* (0/1), as well as on the presence of a female kin residing in the household (0/1), who may share domestic and care responsibilities. *Female kin* is defined as a family member (not head, partner or child of the household head), ages 19-64. *Household income* is measured in US dollars and expressed in quintiles<sup>10</sup>.

We use age-grade disparity (0/1) as a measure of girls’ educational attainment, where 1 indicates that the adolescent is old to her grade, commonly because she dropped out from school or repeated a grade, and 0 indicates she is in the corresponding grade for her age. We constructed this variable dividing the child’s completed years of schooling by the child’s current age minus 7, the mandated age for starting school in Brazil. We collapsed this measure to a bivariate indicator (Marteleto and Dondero 2013). It is worth noting that the Brazilian education system makes frequent use of grade retention as a control for educational progress (OECD 2011). All models control for residence in an urban area (0/1), region within country (5 categories) and year.

### Plan of Analysis

#### *Exploring the connection between mothers’ work intensity and girls’ housework.*

As a starting point, we conducted a logistic model predicting at least 1 hour of girls’ household labor (0/1) with their mothers’ work intensity (2 categories, 1=35 & more hours). This model also includes family income quintile, race (0/1), educational attainment of the household head (4-cat.), whether the mother has a partner (0/1), the presence of a female kin (0/1), and the presence of at least one sibling aged 9 or younger (0/1). As noted, all equations control for year, urbanicity and region. Using the same independent variables, our second regression model predicts girls’ number of hours allocated in domestic and care work (continuous).

#### *Exploring SES variation in the association between mothers’ work intensity and girls’ housework.*

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<sup>10</sup> We use the official exchange rate for each year and country proportioned by the World Bank (local currency unit per US \$).

Next, we added to the previous equation an interaction term between mothers' work intensity (0/1) and family income quintile, in order to explore whether family income moderates the relationship between moms' work intensity and daughters' time spend on domestic and care work.

*Exploring the impact of girls' housework on their educational attainment: age-grade disparity.*

Third, we implement a model predicting girls' age-grade disparity (0/1) and its relation to domestic and care work. For this equation we tested iteratively each of the three measures of girls' domestic and care work described above. These models control for family income quintile, school enrollment, educational attainment of the household head, race, whether the mother has a partner or not, urbanicity, region and year.

## Results

### Descriptive Information

Table 1 provides descriptive information on the girls in our sample, all 13 to 18 years old. The mean family income in their households was 994 dollars and most of their parents had low educational attainment (58% of household heads had not finished elementary education and only 10% have either finished high school or have some level of college education). 77 percent of their mothers had a partner (either married or in cohabitation), and about 30 percent of them had siblings younger than 10 years old living in the house. Over half of these girls were non-white (mixed-raced or black) and more than 80 percent lived in urban areas. Finally, whereas the clear majority were enrolled in school (over 87%), 30% have some level of age-grade disparity.

Table 1 also shows that domestic and care work are common activities among Brazilian teenage girls. 83% of them report doing some form of domestic or care work in the week of reference, while the mean weekly hours reported is 13. Furthermore, about 38% of their mothers worked 35 hours or more per week in all their jobs

[Insert Table 1]

Table 2 shows means and proportions for the variables presented above but calculated by 2 categories of girls' time allocation to domestic and care labor: 0-14 hours versus 15 and more hours. It shows substantial differences across the 2 groups. In a broad sense, girls who allocate 15

to more hours to household labor show a more-disadvantaged socioeconomic profile. Thus, a markedly lower proportion of girls with high levels of household work has a parent with higher level of education (4.7 percent versus about 13 percent among girls with a reduced amount of family work). Similarly, girls with more hours allocated to family work are more likely to live in rural areas. Around 60 percent of girls who perform 15 to more hours of family labor are non-white, versus 51 percent among the group with fewer hours allocated to these activities.

[Insert Table 2]

Figure 1 shows the association between number of weekly hours of domestic and care work done by female adolescents and their mother's work intensity, by family income quantiles. While across all income quantiles mothers' employment intensity is associated with increased time of adolescent daughters spent on family work, this difference is considerably more pronounced for girls in poorer families. We also see that girls in the poorer quintiles already dedicate more time to domestic and care work than their more-advantaged peers.

[Insert Figure 1]

### Multivariate Results

Table 3-Model 1 presents results for our initial equation predicting girls' participation in domestic labor and care for at least 1-hour per week (0/1), with mothers' work intensity. We use a logistic model, and results are presented in odds-ratios. All our coefficients of interest are statistically significant, and, as expected, participation in household labor is negatively associated with both family income and the educational attainment of the household head. Furthermore, mothers' paid employment for 35 weekly hours or more is associated with about a 32 percent increase in the odds of daughters engaging in household labor. Also expected, living in an urban area and having at least one female kin in the household are factors associated to reduced odds of performing in family work. Model 2 presents results for the same model after including an interaction term between family income (quintile) and mothers' work intensity (2 categories). Our interaction term is statistically significant, which suggest that the association between mothers' paid employment and daughters' unpaid domestic and care labor varies by levels of household income.

[Insert Table 3]

Table 4 shows our results for models predicting weekly hours of girls' domestic and care labor (continuous). Results in Model 1 confirm the pattern discussed for Table 3, and all estimates show the expected direction. Both educational attainment of the household head as well as overall household income are negatively associated to the number of hours girls allocate to unpaid domestic labor, while (minority) race and living in a rural area are associated with longer hours of girls in such activities. Furthermore, the presence of an adult female kin predicts with lower engagement of girls in household activities ( $b=-0.515$ ,  $p< 0.01$ ), and, as expected, the presence of young siblings predicts increased hours. Whether the mother has a partner (either spouse or in cohabitation) is associated to lower levels of girls' unpaid domestic labor. Moreover, having a mother who works for pay for 35 weekly hours or more increases the likelihood of girls performing domestic and care labor ( $b=1.941$ ,  $p< 0.01$ ).

[Insert Table 4]

The second column of Table 4 presents results for the previous model after adding an interaction between family income and mothers' work intensity. Our interaction term is significant, which suggests that the effect of mothers' full-time employment in daughters' unpaid family work is stronger for girls from disadvantaged socioeconomic backgrounds versus their more-advantaged peers. To illustrate these effects, we calculated predicted hours of girls' family work by household income group and mothers' work intensity (Figure 2). Figure 2 shows a higher level of response from girls in the first family income quintile (lower income) to an increase in their mothers' hours in the labor market. Plausibly, families in higher income quintiles opt for outsourcing domestic labor when mothers allocate additional hours to work for pay. In other words, socioeconomic-advantaged families may not need the household labor from adolescent daughters.

[Insert Figure 2]

Finally, Table 5 reports estimates from logistic regressions models predicting age-grade disparity with 2 measures of girls' domestic and care labor. For Model 1 we use our continuous measure of girls' domestic and care work (0-98), while for Model 2 we use our bivariate measure with a threshold of 15 hours (1= 15 or more hours in domestic and care work, 0= 14 or less hours in these activities). Across the two specifications, our coefficient of interest is significant,

suggesting that girls' time spend in domestic and activities is associated with a higher likelihood of age-grade disparity, even after controlling for other key factors.

[Insert Table 5]

### FINAL REMARKS

Our preliminary findings suggest that girls' unpaid domestic and care work in Brazil has a detrimental effect on girls' educational outcomes. Moreover, mothers' work intensity is positively associated with adolescent girls' time spent on domestic and care activities, and this effect varies across socioeconomic strata. That is, the increase in mothers' working hours has a larger effect in daughters' unpaid domestic work among disadvantaged families versus those in higher income quintiles. Taken as a whole, these results point out to girls' domestic and care labor as a mechanism in the transmission of gendered inequality.

### Tables and Figures

Table 1. Weighted Means and Proportions. Only females, children of the household head, ages 13-18. Brazil, 2002-2015.

Variable	%	Variable	%
Did at least 1 hour of family work in previous week (0/1)	82.84	Sibling aged less than 10	29.79
Enrolled in school	87.65	Urban area	81.00
Any level of age-grade disparity	29.92	Region	
Non-white	53.66	North	8.51
<i>Household characteristics</i>		North-East	29.71
Mother work full-time or more	38.33	South-East	40.41
Household Head has less than Elementary Education	57.69	South	14.20
Head has Elementary education	10.39	Center-West	7.17
Head has some level of High School	22.24	Mean family income (USD)	994.09
Head finished High School & more	9.90		(1,824.88)
Mother has a partner	76.63	# of Weekly Hours usually spent on housework (mean)	12.63
Female kin present in the household	2.6		(10.99)
N= 210,270			

Source: PNAD, years 2002-2015.

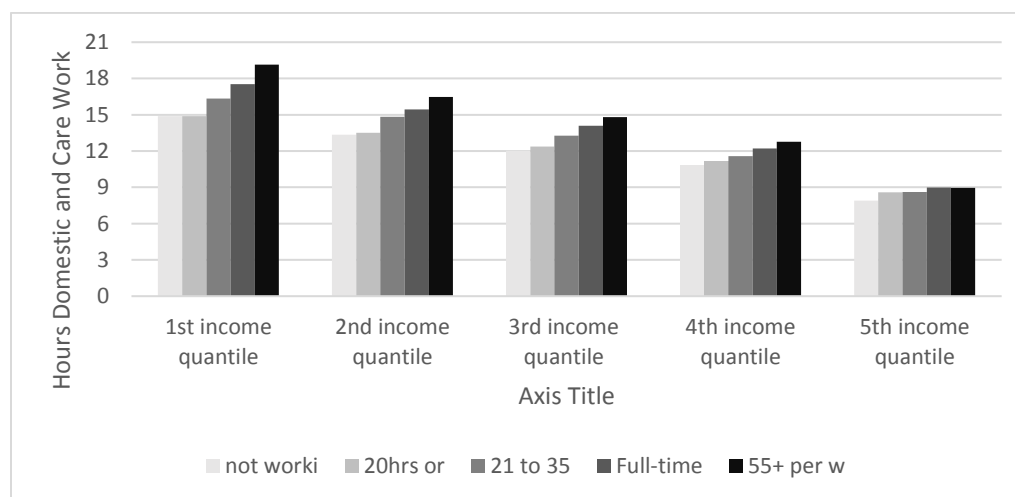
Table 2. Means and Proportions. Key Measures by Girls' Amount of Unpaid Domestic and Care Work.

Only Females, ages 13-18, children of the household head.

Variable	Less than 15 Hours of Family Work	15 hours & + of Family Work
Enrolled in school	89.26	84.64
Any level of age-grade disparity	26.87	35.58
Non-white	50.5	59.5
<i>Household characteristics</i>		
Mother work full-time or more	37.5	39.84
Household Head has Less than Elementary education	52.29	67.13
Head has Elementary education	10.51	10.15
Head has some High School	24.51	18.00
Head completed High School or more	12.69	4.72
Mother has a partner	77.8	74.31
Female kin in the household	2.84	2.59
Sibling aged less than 10	28.73	31.73
Urban area	83.7	75.80
<i>Region</i>		
North	7.4	9.75
North-East	27.83	34.03
South-East	42.68	36.18
South	14.69	13.30
Center-West	7.40	6.74
Mean family income (USD)	1,160.62 (2,145.45)	684.97 (905.8936)

Source: PNAD, years 2002-2015.

Figure 1: Descriptive. Girls' Number of Unpaid Weekly Hours in Domestic and Care Work by Family Income and Mothers' Paid-Employment Intensity. Brazil, Only Females, ages 13-18, children of the household head.



Source: PNAD, 2002-2015. Mothers' Paid Employment Categories: Not Working, 1-20 hours, 21-35 hours, Full time, Overtime (55 & More hours)



Table 3. Logistic Models predicting Girls' Participation in Unpaid Domestic and Care Work. Results in Odds-Ratio.

y=household labor, 0/1	Model 1	Model 2
Family Income Quintile. Ref.: Richest Quintile		
Income quantile 4	1.580*** (0.0330)	1.519*** (0.0423)
Income quantile 3	1.804*** (0.0419)	1.668*** (0.0480)
Income quantile 2	2.010*** (0.0526)	1.877*** (0.0577)
Income quantile 1	2.266*** (0.0695)	2.091*** (0.0710)
Mother works 35h or more	1.324*** (0.0190)	1.193*** (0.0315)
Family Income Quintile x Mothers' Work Intensity		
Income quantile 1* 35h or more		1.324*** (0.0685)
Income quantile 2* 35h or more		1.189*** (0.0529)
Income quantile 3* 35h or more		1.204*** (0.0501)
Income quantile 4* 35h or more		1.075* (0.0419)
Non-white	1.298*** (0.0189)	1.297*** (0.0189)
Educ. Attainment Household Head. Ref.: Elementary Incomplete & less.		
Elementary complete	0.804*** (0.0187)	0.804*** (0.0187)
Some High School	0.725*** (0.0127)	0.725*** (0.0127)
High School Complete or More	0.449*** (0.0100)	0.450*** (0.0101)
Mother has a partner	0.947*** (0.0163)	0.955*** (0.0165)
Female kin	0.899*** (0.0348)	0.900*** (0.0349)
Sibling aged under 10	1.041*** (0.0158)	1.041*** (0.0158)
Enrolled in school	1.151*** (0.0240)	1.153*** (0.0240)
Urban area	0.653*** (0.0138)	0.651*** (0.0138)
Constant	4.682*** (0.246)	4.863*** (0.261)
Observations	210,270	210,270

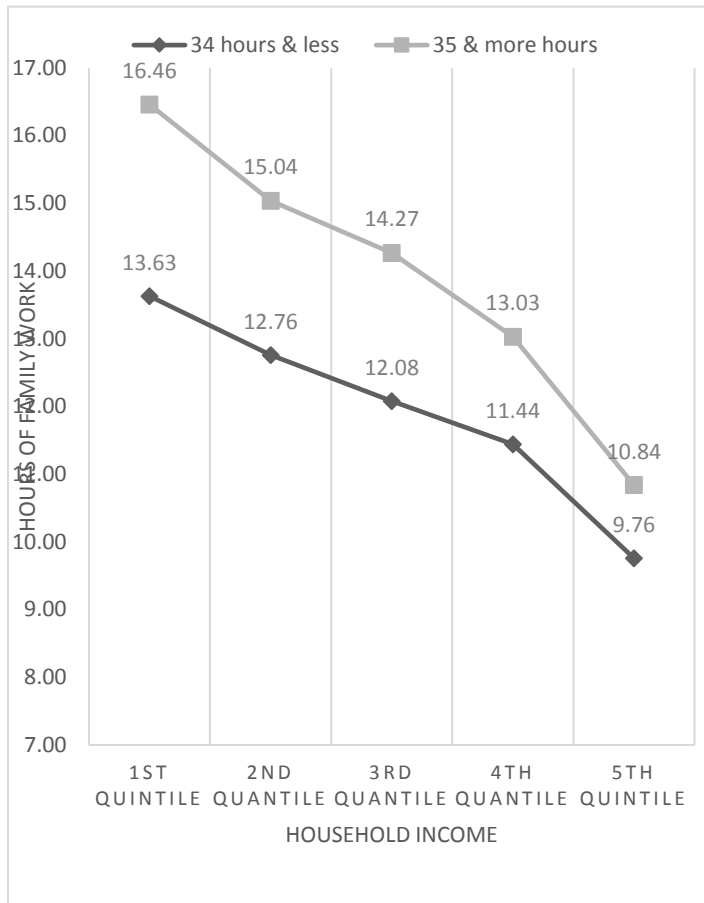
Notes: Source: PNAD, years 2002-2015. Brazil, only girls 13-18 years old, children of the household head. All models include controls for region and year. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 regressions. Models Predicting Unpaid Weekly Hours in Domestic and Care Work (continuous)

	Model 1	Model 2
Family Income Quintile. Ref.: Richest Q.		
Income quantile 4	1.967*** (0.0783)	1.671*** (0.107)
Income quantile 3	2.872*** (0.0855)	2.331*** (0.109)
Income quantile 2	3.538*** (0.0937)	3.004*** (0.113)
Income quantile 1	4.367*** (0.105)	3.777*** (0.120)
Mother works 35h or more	1.941*** (0.0494)	1.108*** (0.106)
Family Income Q. x Mothers' Work Intensity		
Income quantile 1* 35h or more		1.655*** (0.165)
Income quantile 2* 35h or more		1.199*** (0.153)
Income quantile 3* 35h or more		1.128*** (0.149)
Income quantile 4* 35h or more		0.521*** (0.145)
Non-white	0.961*** (0.0508)	0.959*** (0.0507)
Educ. Attainment Household Head. Ref.: Elementary Incomplete & less.		
Elementary complete	-0.838*** (0.0794)	-0.839*** (0.0793)
Some high school	-1.876*** (0.0622)	-1.869*** (0.0622)
High school complete or more	-4.115*** (0.0902)	-4.094*** (0.0902)
Mother has a partner	-0.630*** (0.0583)	-0.578*** (0.0585)
Female kin	-0.515*** (0.141)	-0.507*** (0.141)
Sibling aged 9 or less	0.350*** (0.0510)	0.352*** (0.0510)
Enrolled in school	-2.486*** (0.0706)	-2.477*** (0.0706)
Live in urban area	-1.561*** (0.0634)	-1.571*** (0.0634)
Constant	15.25*** (0.185)	15.59*** (0.190)
Observations	210,270	210,270

Notes: Source: PNAD, years 2002-2015. Brazil, only girls 13-18 years old, children of the household head. All models include controls for region and year. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure 2. Girls' Predicted Unpaid Weekly Hours in Domestic and Care Work by Mothers' Work Intensity (34 hours & less versus 35 hours & more) and Family Income (Quintiles).



Source: PNAD, 2002-2015. Brazil, Only Females, ages 13-18, children of the household head.

Table 5. Logistic models Predicting Age Grade Disparity (0/1). Results in Odds-ratio.

<i>y</i> = age/grade disparity, 0/1	Model 1	Model 2
<i>Measures of household work</i>		
Hours on household work	1.003*** (0.000521)	
Does 15 or more hrs. of household work		1.052*** (0.0123)
Family Income Quintile. Ref.: Highest/Richest Quintile		
Income quantile 4	1.425*** (0.0351)	1.428*** (0.0352)
Income quantile 3	1.735*** (0.0436)	1.740*** (0.0437)
Income quantile 2	2.149*** (0.0557)	2.157*** (0.0559)
Income quantile 1	3.189*** (0.0879)	3.204*** (0.0882)
Educ. Attain. of Household Head. Ref.: Elementary Incomplete & less. Elementary Complete		
	0.592*** (0.0120)	0.592*** (0.0119)
Some High School	0.411*** (0.00686)	0.410*** (0.00684)
High School complete &+	0.266*** (0.00845)	0.265*** (0.00841)
Mother has a partner	0.788*** (0.0108)	0.787*** (0.0108)
Non-white	1.486*** (0.0188)	1.487*** (0.0188)
Enrolled in School	0.435*** (0.00704)	0.434*** (0.00700)
Urban area	0.750*** (0.0105)	0.749*** (0.0105)
Constant	1.403*** (0.0613)	1.439*** (0.0622)
Observations	210,270	210,270

Notes: Source: PNAD, years 2002-2015. Brazil, only girls 13-18 years old, children of the household head. All models include controls for region and year. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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