Parenthood Wage Gaps Across the Life-Course: An Intersectional Comparison by Gender and Race

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# Parenthood Wage Gaps Across the Life-Course: An Intersectional Comparison by Gender and Race

Zachary James Van Winkle<sup>1</sup>, Anette E.Fasang<sup>2</sup>

# Abstract

Objective: Parenthood wage gaps are mapped over the life course for white, Black and Hispanic men and women by the number of children in the US.

Background: For white women, research indicates that motherhood penalties only persist over the life course if they have three or more children. It is unknown how stable parenthood wage gaps are for fathers and mothers of other racial backgrounds.

Methods: Age-specific parenthood wage gaps from ages 20-45 are estimated using data from the 1979 and 1997 National Longitudinal Studies of Youth (NLSY79 and NLSY97) and fixed effects models.

Results: Only white women with three or more children suffer an adjusted motherhood penalty at age 45. For Black and Hispanic mothers, penalties are concentrated around age 30 and then attenuate irrespective of the number of children. Fatherhood premiums are confined to very early adulthood for white men.

Conclusions: Parenthood wage gaps are concentrated in brief periods of the life course. Enduring penalties only occur for white mothers with many children and signify white women's advantage compared to women of color in two respects: 1) the penalty occurs relative to high earnings of childless white women, which are unattainable for childless women of color, and 2) white mothers with many children enjoy higher household incomes compared to their Black and Hispanic peers, which decreases the economic pressure to earn own income.

Keywords: Parenthood wage gaps, life course, gender, race, intersectionality

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# Introduction

Parenthood wage gaps, that is, the percentage difference in average wages between parents and childless individuals, are a standard measure of labor market disadvantage for parents and have become a stylized fact (e.g., Budig and England 2001; Budig and Hodges 2010; Correll, Benard, and Paik 2007). Findings generally point to motherhood wage (Budig and England 2001) and fatherhood wage premiums (Budig and Hodges 2010; Correll, Benard, and Paik 2007). Studies highlight variation in parenthood wage gaps separately across racial and ethnic groups (Glauber 2007), by the number of children (Abendroth, Huffman, and Treas 2014), and across the life course (Kahn, García-Manglano, and Bianchi 2014). We bring these three perspectives together to assess, whether intersectional differences in parenthood wage gaps are stable or attenuate over the life course for parents of one, two or three and more children. For mothers, forgone labor market experiences, parenting demands that conflict with ideal worker norms, and negative employer discrimination will tend to increase with the number of children. For fathers, having more children might additionally motivate them to achieve higher incomes and reinforce positive employer discrimination. For both genders, more children are likely associated with larger negative or positive wage gaps compared to their childless peers (Abendroth, Huffman, and Treas 2014).

We adopt an intersectional analytical strategy (Collins 2015) that compares gender by race groups focusing on Black, Hispanic and white men and women (McCall 2002; 2005). Intersectionality was originally introduced in the context of antidiscrimination legislation (Crenshaw 1991). The intersectional lens avoids naturalizing white male privilege as a reference category against which all other groups are compared (Browne and Misra 2003). If notable differences exist between racial groups, pooled averages or simply controlling for race, which is the standard fare in the literature on parenthood wage gaps, potentially misrepresents all groups. Instead, we highlight the unique experience of each gender by race group over the life course.

A core tenet of the life course paradigm holds that possibilities to combine work and parenthood unfold across the life course and are shaped by historically specific opportunity structures in educational systems, local labor markets and child care provision, all of which differ by gender, race and parenthood status (Elder, Johnson, and Crosnoe 2003; Elder 1974; Ryder 1965; Bernardi, Boertien, and Geven 2019). The life course paradigm further posits that the timing and combination of family events matters for their social and economic consequences, including parents' wages. Several studies show that motherhood penalties increase with the number of children and early timing of births (Kahn, García-Manglano, and Bianchi 2014; Abendroth, Huffman, and Treas 2014), both of which vary by gender and racial background. Compared to whites, Black and Hispanic men and women on average have more children at earlier ages (Mathews and Hamilton 2016).

We address two research questions. First, how do parenthood wage gaps differ across the life course for Black, Hispanic and white men and women? Second do parenthood wage gaps over the life course depend on the number of children for Black, Hispanic and white men and

women? We use data from the 1979 and 1997 National Longitudinal Studies of Youth (NLSY79 and NLSY97) with fixed effects modeling to compare the age-specific parenthood wage gaps for six intersectional gender by race groups.

Our study demonstrates the importance of life course timing for motherhood wage penalties and fatherhood wage premiums for difference family sizes across racial groups. Motherhood wage penalties tend to be largest near age 35, while fatherhood premiums dissipate soon after age 25. Particularly for men of any race, fatherhood premiums are concentrated in a brief early age range, while enduring motherhood penalties for having three or more children are confined to white women. We show that our estimates would be underestimated had we not focused on age heterogeneity and would obscure important variation across families of different sized and across intersectional groups.

# Background

In the following background section, we begin by briefly discussing explanations for parenthood wages gaps. We then move to critically discuss the previous literature and findings on motherhood wage penalties and how these vary across race, historic time, and the life course. Findings on fatherhood wage premiums are then discussed in a similar manner, before we develop hypotheses on how motherhood wage premiums and fatherhood wage penalties develop across the life course for Black, Hispanic, and white men and women with smaller and larger families.

Explanations for parenthood wage gaps fall into labor supply and demand side mechanisms (Correll, Benard, and Paik 2007). On the supply side more or less productive and work oriented individuals might select into parenthood. Irrespective of selection, parents could become less productive than childless individuals due to the loss of human capital during career interruptions and a limited ability to fulfill the ideal worker norm of reliability, flexibility and working long hours when children are young (Weeden, Cha, and Bucca 2016). Demand side explanations include positive or negative discrimination of parents in terms of hiring, firing, wages and promotions (Correll, Benard, and Paik 2007; Acker 2012). Opportunities to accumulate and maintain human capital, as well as employer discrimination vary between parents and childless, but also by gender and race more generally. Both supply and demand side factors would suggest increasing wage gaps with additional children (Abendroth, Huffman, and Treas 2014).

## **Motherhood Penalties**

Most studies on motherhood penalties have either focused on the total motherhood penalty contrasting mothers to non-mothers, or the per child motherhood penalty, of white women or include race only as a control variable (England et al. 2016; Budig and Hodges 2010). Penalties are lowest for the highest earning, most highly skilled white mothers (England et al. 2016). The few studies that have examined racial differences largely point to smaller wage penalties for Black mothers (Glauber 2007; Budig and England 2001) compared to white women. In contrast more recent evidence suggests that the motherhood penalty for Black women is on the rise

again since 2008 (Pal and Waldfogel 2016). Pal and Waldfogel (2016) use data form the Current Population Survey (CPS) from 1967 to 2013 and adjust for age, education and marriage to estimate Black women's overall motherhood penalty at about 5 percent in 2013 in contrast to a declining trend to only 1 percent for white women, and a zig-zag trend between 0 and 6 percent in the past two decades for Hispanic women (p. 115). Their estimates further show that motherhood penalties were always substantially largest for mothers of three or more children with a peak of 18 percent in 1989, without differentiating by racial background and the number of children simultaneously. By 2013 on average mothers of one or two children suffered no more motherhood penalty, while it remained notable at 6 percent for mothers of three or more children (p. 112).

Glauber's (2018) findings also based on CPS data corroborate a decline of the overall motherhood penalty between 1980 and 2010 contrasting mothers to non-mothers controlling for race, education and labor market experience. Using quantile regression, Glauber (2018) shows that the motherhood penalty disappeared for high-earning women by 2010. Low-earning women continued to pay a penalty for motherhood, albeit lower compared to the 1980s. Findings are robust when considering alternative measures of parenthood, which is the average per child penalty or the number of children separately.

Jee, Misra, and Murray-Close (2019) use data from the Panel Study of Income Dynamics (PSID) to estimate per child motherhood penalties separately for mothers of one, two or three and more children in three time periods (1986-1995, 1996-2004, and 2006-2014), adjusting for a larger set of controls compared to Pal and Waldfogel (2016), including a detailed measure of labor market experience. In contrast to the findings based on CPS data above, results indicate that the motherhood penalty remained quite stable over time net of labor market experience. Race is treated as a control variable in OLS regressions and, as a time constant characteristic, drops out of their fixed effects regressions on the per child motherhood penalty.

In contrast to time trends across historical periods presented in Pal and Waldfogel (2016), Glauber (2018) and Jee, Misra, and Murray-Close (2019), Avellar and Smock (2003) use a cohort-based approach comparing birth cohorts rather than historical time periods. In line with Jee, Misra, and Murray-Close (2019), they find no change in the per child motherhood penalty for women born between 1944 and 1954 (NLS-YW, observed in 1975-1985) compared to women born between 1958 and 1965 (NLSY, observed 1986-1996), yet without distinguishing between the number of children. Estimates are adjusted for race, education and prior labor market experience, among others. For both cohort groups, black women have lower motherhood penalties compared to white women.

Overall it seems that studies based on representative historical time periods find more racespecific change in motherhood penalties compared to cohort comparisons that follow specific birth cohorts over time. Possibly, compositional differences, for example by age or education, among mothers and employed women affect Pal and Waldfogel's (2016) estimates in a way that is precluded by the age-specific cohort comparison of Avellar and Smock (2003). As noted by Jee, Misra, and Murray-Close (2019: 14), "Yet, given changing patterns around gender and work, and the tremendous influx of mothers into the U.S. labor force, it is important to recognize how intractable the motherhood wage penalty appears to be.". Gangl and Ziefle (2009) highlight the dynamic selection of mothers into employment in the years following childbirth that will vary with economic cycles and can generate strong period effects that diminish in cohort measures. Dynamic selection into employment, but also motherhood likely varies by intersectional combinations of gender and race due to occupational segregation and inequalities in hiring, firing and promotion (Wingfield 2009; Acker 2006). Florian (2018) shows that white and Hispanic mothers of more than two children suffer the greatest loss in work experience over the life courses. In contrast among Blacks only mothers of three and more children experience a significant reduction in work experience.

In our study, we therefore follow specific cohorts over the life course to assess intersectional differences in age-specific parenthood wage gaps that persist irrespective of period-specific fluctuations in the selection into motherhood and employment. In the analyses below, we pool the two cohort groups of the NLSY to obtain sufficient case numbers to examine parenthood wage gaps for six gender by race groups over the life course depending on the number of children. In line with previous findings (Avellar and Smock 2003) that follow specific birth cohorts over time, our findings also remained very similar across cohort groups (available from authors).

Our study builds on Kahn, García-Manglano, and Bianchi (2014), who proposed a similar approach also using the NLSY cohorts, but without separating by gender and race. Their study asked, whether wage gaps and differences in occupational prestige between mothers and childless women continues to widen or close over the life course. Findings based fixed effects regression on a pooled sample of women of different racial background support that adjusted per child motherhood wage penalties attenuate with age - except for women with three or more children. Race-specific analyses are not presented. It is therefore unclear if this trend applies to all racial groups equally.

Taken together, findings suggest that high earning, married white women with one or two children suffer no or very modest motherhood wage penalties in recent years. In contrast, mothers in lower earnings positions and with three or more children might increasingly earn less than their childless peers and cannot catch up later in life (Aisenbrey and Fasang 2017; England et al. 2016; Kahn, García-Manglano, and Bianchi 2014). Findings for motherhood penalties of Black and Hispanic women are few and more mixed (Glauber 2007; Pal and Waldfogel 2016). Note that smaller motherhood penalties among racial minorities can result from lower wages of the reference group of childless Black and Hispanic women, who do not have equal access to high paying jobs as their childless white peers. Moreover, many studies either examine the overall motherhood penalty contrasting all mothers to childless women, or the per child motherhood penalty without separating the effect for each additional child. Yet recent studies demonstrate that the number of children is consequential for the persistence of the motherhood penalty over the life course, at least for white women (Kahn, García-Manglano, and Bianchi 2014).

#### **Fatherhood Premiums**

Compared to motherhood penalties, especially for white women, there is less research on fatherhood premiums, and even less about intersectional differences or their persistence across the life course. Using NLSY data, Loughran and Zissimopoloulos (2009) report no effect of

fatherhood on wages or wage growth per child. Equally based on data from the NLSY79, Killewald (2013) shows that married, residential, biological fathers enjoy adjusted wage gains of 4 percent. In contrast cohabiting fathers, non-residential fathers and stepfathers have no fatherhood premium. This study compares an overall fatherhood indicator to not having any children in different types of fatherhood. While the prevalence of unmarried and non-residential fatherhood is higher among minority men, once these types of fatherhood are controlled for, there are no significant race differences in the fatherhood premium.

Focusing on married men and women only, Lundberg and Rose (2000) use data from the PSID to highlight that both motherhood penalties and fatherhood premiums depend on the partners labor market behaviour and time spent in the household after childbirth. In households where wives continue to work after the birth of a first child, fathers work fewer hours, but their hourly wages increase. Therefore, differential employment of mothers of different racial background (see Florian 2018 above) could spill over into different fatherhood premiums for men in same race couples.

The few studies that have examined racial differences in fatherhood premiums point to smaller fatherhood premiums for Black men compared to white men (Glauber 2007; Budig and Hodges 2010). Glauber's (2018) findings based on CPS data show an increase in fatherhood premiums between 1990 and 2010, which disproportionately benefited high earning men. In line with the more unequal wage distribution in 2010 compared to the two earlier decades, high-earning men received notably larger wage premiums compared to middle and low earning men. These analyses control for race, but do not present differences across racial groups nor locate fatherhood premiums in specific stages in the life course. Because minority men are overrepresented at the lower end of the wage distribution and white men are concentrated at the upper tail they have implications for intersectional inequalities in wages and fatherhood wage premiums.

To the best of our knowledge to date research taking a life course perspective on agespecific parenthood wage gaps (Kahn, García-Manglano, and Bianchi 2014) has not explicitly addressed differences by both gender and race, whereas research focusing on race or gender differences has paid little attention to age-specific parenthood wage gaps over the life course. At the same time, prior findings point to the central role of the number of children for the persistence of parenthood wage gaps over the life course, at least for white women.

## Hypotheses

There are several reasons to assume that parenthood wage gaps vary by racial background. There is pronounced gender- and race specific occupational segregation and the earnings distribution within each of these groups varies (McCall 2002). The highest earning jobs are most accessible to white men and women, whereas Black and Hispanic men and women are concentrated in the middle and lower end of the overall wage distribution. More compressed wage distributions within minority populations could level out any differences between childless and parents. Moreover negative employer discrimination of Blacks and Hispanics might overrule positive employer discrimination of fathers, but reinforce negative employer discrimination of mothers of color (Correll, Benard, and Paik 2007). In addition, economic

pressure to earn own income will vary with household income, which is on average considerably higher for whites compared to Blacks and Hispanics.

Moreover, parenthood wage gaps are likely to increase with the number of children, but possibly not equally for parents of different racial background. On the supply side, additional children increase parenthood-related time out of the labor force, and related human capital depreciation that could either accumulate or compensate gender and race specific opportunities to attain and maintain human capital. Taking care of additional children might further compromise parents' ability, particularly mothers' to comply with an ideal worker norm in terms of flexibility and overtime work, which in term will depend on available child care arrangements. Because mothers on average still take on more care responsibilities, these effects likely do not extent to fathers. On the demand side, perceptions of large families differ from those of small families, which might lead to stronger positive or negative wage discrimination of parents of many children compared to parents of only one or two children and again counteract or reinforce negative employer discrimination of women and racial minorities.

We therefore hypothesize that compared to childless women within each racial group, mothers of three or more children suffer the largest and most persistent motherhood penalties across the life course, due to human capital depreciation, and a lower ability to comply with the ideal worker norm (*Hypothesis 1*). Adjusting for human capital related factors should then significantly reduced larger motherhood penalties for mothers of many children. White (childless) women are on average more likely to work in human capital-intensive jobs. Therefore the human capital component of the motherhood penalty could be strongest for white mothers of many children, whose wages would then be particularly lower compared to their on average high earning childless peers. In addition, white women of many children might be more likely to have a high earning spouse compared to Black and Hispanic women and therefore face lower economic pressure to earn own income. We therefore hypothesize that *the motherhood penalty is larger among white women of three or more children compared to Black and Hispanic women with many children (Hypothesis 2)*.

Similarly, we hypothesize that *fatherhood premiums are largest and most persistent for fathers of three or more children (Hypothesis 3)*, because their economic pressure and corresponding motivation to earn income is highest and they will benefit most from positive employer discrimination. Due to an accumulation of labor market advantage in terms of human capital accumulation, positive selection into fatherhood and positive employer discrimination for whites and fathers, we hypothesize that fatherhood premiums are lower and less enduring for Black and Hispanic men (Hypothesis 4).

## Data & Methods

We use the 1979 and 1997 National Longitudinal Surveys of Youth (NLSY79 and NLSY97). The NLSY79 contains rich, prospective information on residency, education, income, employment as well as marital status and fertility. The original NLSY79 sample consists of 12,686 respondents born between 1957 and 1964 that were first interviewed in 1979 as 14-22–year-olds. Our data covers the years 1979 – 2008, when the respondents were age 20-

45. The NLSY97 interviewed a total of 8,984 respondents born between 1980 and 1984 in 1997 when they were 13 to 17 years old. Our analysis for the NLSY97 covers the years 2000-2015, when respondents were ages 20 to 35. Together the NLSY97 and NLSY79 provide sufficient case numbers to differentiate parenthood wage gaps for sub-groups by gender, race and parity over the life course. Note that the estimates from ages 35 to 45 rely only on the NLSY97 respondents. Separate analyses by birth cohort groups showed no notable differences between the two surveys and are therefore not presented (available from authors).

The studies switched from annual to biannual collection in 1994 for the NLSY79 and in 2011 for the NLSY97. We construct a person-year dataset for individuals between the ages of 20 and 45 for the NLSY79 cohort and 20 and 35 for the NLSY97 cohort, who worked at least one year in the previous year. They are included in the analyses, if they reported to work at least one hour in the last year. We have at least one observation for 12,666 NLSY79 respondents and 7,696 NLSY97 respondents. All of these cases contribute to the estimation of the constant. Only those cases that were observed for at least two waves contribute to the coefficients and their standard errors in the fixed effects model. Summary statistics and other descriptive information on case numbers for each race by gender group can be found in section 1 of the appendix supplement.

### Variables

Consistent with most previous literature our dependent variable is the natural logarithm of the hourly wage for the main job reported by the respondent. We use the number of children as a categorical variable to assess the impact of each additional child separately (Pal and Waldfogel 2016; Petersen, Penner, and Høgsnes 2014). The estimates reflect the wage gap of parents of one, two, or three and more children relative to the reference category of childless individuals of the same race and gender at specific ages.

We also include a number of control variables that are commonly used in the empirical literature (e.g., Budig and Hodges 2010). We include several human capital characteristics: the cumulative number of weeks out of the labor force, the mean number of weekly work hours, the highest grade completed including a squared term, the number of weeks employed in the main job including a squared term, the cumulative number of weeks in full-time employment including a squared term, and the number of weeks in part-time employment including a squared term. In addition to human capital factors, we include indicators for whether the respondent was enrolled in education, their marital status (never married, married, separated, divorced, or widowed), occupational group (reduced ISCO 1990), industry group (reduced CPS 2000), the percentage of women observed in the respondent's occupation-industry group, whether the respondent lives in an urban or rural area and a regional indicator (northeast, north central, south, or west). This leaves us with an analysis sample of 12,066 NLSY79 respondents in 143,341 person-years and 7,389 NLSY97 respondents in 66,445 person-years.

## **Analytical Strategy**

We estimate parenthood wage differentials using fixed effects models with an interaction between age and the number of children as a categorical variable of "one child", "two children", and "three or more children" each compared to the reference category of

childless men or women of a specific racial background at a given age. Specifically, the log wage y, of individual i, at time t, is modeled as a non-linear function of the number of children C, age A, and an interaction between the categorical variable of the number of children and age. The estimated association between the number of children and log wages  $\beta_1$ , represents the parenthood wage gap, i.e. motherhood penalty or fatherhood premium, for a parent with one child, two children, or three or more children. Age is included in the model as a number of dummy variables from age 20, i.e. A<sub>20</sub>, to age 45, i.e. A<sub>45</sub>, for the NLSY79 and age 35, i.e. A<sub>35</sub>, for the NLSY97. Therefore, we also have numerous interactions terms, e.g. C<sub>1</sub>·A<sub>18</sub>, C<sub>1</sub>·A<sub>19</sub>, ..., C<sub>J</sub>·A<sub>K</sub>, that quantify how the parenthood wage gap varies by parity and age. Standard errors are clustered by individual. If individuals had children before age 20 they are included and add to the fixed effects if they have additional children after age 20.

$$\ln(y_{it} - \bar{y}_i) = \beta_0 \underbrace{+}_{j=0} \sum_{k=20}^{J} \beta_{1_j} (C_{j_{it}} - \bar{C}_{j_i}) + \sum_{j=0}^{K} \beta_{2_k} (A_{k_{it}} - \bar{A}_{k_i}) + \sum_{j=0}^{K} \beta_{3_{jk}} (C_{j_{it}} - \bar{C}_{j_i}) (A_{k_{it}}^2 - \bar{A}_{k_i}) + (\epsilon_{it} - \bar{\epsilon}_i)$$

We use a time-demeaning approach, where the associations between log wages and all timevarying covariates are estimated using time-specific deviations from individual averages, e.g. the difference between an individual's number of children at a given time point and the individual's average number of children across all observations.

We estimate models for parenthood wage gaps for parents of one, two or three and more children separately for Black, Hispanic, and white men and women (6 models). For each group, we present two model steps first unadjusted and then adjusted wage gaps, leading to 12 models in total. We exclude Asian and Native Americans from our white category by selecting only respondents of European, Canadian, or US American ancestry with additional information from the NLSY.

The models proceed in two steps. 1) Unadjusted parenthood wage gaps are quantified in models that only include the parenthood and age indicators. 2) Adjusted wage gaps additionally control for human capital and demographic factors including information on labor force participation and educational attainment, as well as educational enrollment, marital status, occupational and industry group, the proportion of women within occupation-industry groups, and residential characteristics. The models adjusting for only human capital factors are very similar to models adjusting for all control variables. We therefore only present fully adjusted models, and note that most of the adjustment is due to the human capital factors. Our results are robust to modeling strategy, i.e. OLS estimation, and accounting for selection into employment, i.e. including an inverse Mill's ratio from a Heckman selection model.

# Results

#### Motherhood Penalties over the Life Course by the Number of Children

The top panels of Figure 1 show age-specific unadjusted motherhood wage gaps with 95 percent confidence intervals for Black (left panel), Hispanic (middle panel) and white (right panel) women. Within each panel, the estimated wage gap for having one, two, or three and more children compared to being childless is represented with the yellow, orange and red line, respectively. The bottom panel of Figure 1 displays adjusted motherhood wage gaps in the same setting controlling human capital factors and all other characteristics. All corresponding models are presented in section 2 of the appendix supplement.

For white women, both mothers of two and three or more children show significant unadjusted motherhood penalties that last until age 45. Moreover, the unadjusted motherhood penalty for Black women of three and more children peaks at a lower level of 20 percent and is concentrated in a brief age window around 30, compared to a higher, but equally age concentrated peak of 25 percent for Hispanic women. In contrast, the unadjusted motherhood penalty reaches almost 30 percent for white women of three and more children in their late 20s and persists until age 45. In contrast, penalties for mothers with one child are considerably smaller. At age 30, white women with one child earn roughly 11 percent less than childless white women, while Black and Hispanic women with one child earn around 15 percent less than their peers. However, these one-child motherhood wage penalties dissipate by age 45.

*Figure 1*. *Motherhood wage gaps, ages 20-45 by race and number of children, unadjusted (top) and adjusted (bottom)* 





Note: Unstandardized regression coefficients and 95% confidence intervals from unadjusted time-demeaned fixed effects models displayed using local polynomial smoothing; NLSY79 and NLSY97; Data weighted.

In line with previous research adjusted motherhood penalties are substantially lower, primarily driven by differential human capital endowment of Black, Hispanic and white childless women and mothers. Note that the differential human capital endowment reflects their actual life course experience and by "controlling" for these factors we create a hypothetical estimate of what their situation would be like, if they had the same human capital as white women. Black and Hispanic mothers only experience a significant adjusted motherhood penalty of about 9 to 13 percent in a few years around age 30, irrespective of the number of children. For white women of only one or two children we also no longer find a significant adjusted motherhood penalty in line with findings of Kahn, García-Manglano, and Bianchi (2014). Only for white women of three and more children there is a significant and enduring motherhood penalty of about 15 percent that peaks in the late 20s and persists until age 45, which is not accounted for by human capital or demographic factors.

In sum, for all racial groups motherhood penalties increase with the number of children and peak around age 30, which is in line with Hypothesis 1. Further, even unadjusted motherhood penalties dissipate and become insignificant for Black and Hispanic mothers after age 35, irrespective of the number of children, which corroborating Hypothesis 2 that motherhood penalties will be most persistent for white mothers of many children.

*Figure 2.* Average hourly wages (top) and household income net (bottom – NLSY79 only) for childless women and mothers



Note: Averages and 95% confidence intervals displayed; NLSY79 and NLSY97; Data weighted.

Average hourly wages and household income of childless women and mothers of one, two or three and more children of different racial background inform about possible mechanisms driving these intersectional differences. First, the hourly pay of white mothers of three or more children is not lower compared to Black or Hispanic mothers of many children. However, the reference category of childless white women, against whom the gap is established, earn significantly more compared to childless Black and Hispanic women. The higher and more persistent motherhood penalty for white mothers of many children therefore signifies an overall earnings advantage of (childless) white women and not a relatively worse hourly pay of white mothers of many children compared to their Black and Hispanic peers (Figure 2, top). Second, white mothers of many children indeed dispose of notably higher household income on average compared to their Black and Hispanic peers (Figure 2, top). Second, white mothers of many children indeed dispose of notably higher household income on average compared to their Black and Hispanic peers (Figure 2, bottom), attesting to their overall better economic position. Lower economic pressure to attain own earnings might at least partly contribute to the high and persistent motherhood penalty for white mothers of many children (Hypothesis 2).

#### Fatherhood Premiums over the Life Course by the Number of Children

Analogous to Figure 1, Figure 3 shows unadjusted (bottom) and adjusted (top) fatherhood premiums for Black, Hispanic and white men by the number of children. The top panels show age-specific unadjusted fatherhood wage gaps with 95 percent confidence intervals for Black (left panel), Hispanic (middle panel) and white (right panel) men. Within each panel, the estimated wage gap for having one, two, or three and more children compared to being childless is represented with the yellow, orange and red line, respectively. All corresponding models are presented in section 3 of the appendix supplement.



*Figure 3. Fatherhood wage gaps, ages 20-45 by race and number of children, unadjusted (top) and adjusted (bottom)* 

Note: Unstandardized regression coefficients and 95% confidence intervals from unadjusted time-demeaned fixed effects models displayed using local polynomial smoothing; NLSY79 and NLSY97; Data weighted.

For men of all racial background we find unadjusted fatherhood premiums that are concentrated in very early adulthood, dissipate quickly and are statistically insignificant by age 25. The unadjusted wage premium for white fathers with two children is considerably higher than for Black and Hispanic fathers with two children. White men with two children earn nearly 50 percent more than childless white men. In contrast, Black fathers with two children earn only 18 percent more than childless Black men, and Hispanic fathers with two children earn only 10 percent more. However, the unadjusted wage premiums across racial groups become similar within a few years and dissipate by age 30 for Black and white fathers and by age 35 for Hispanic fathers. Once adjusted for human capital and other factors, only white fathers with one or two children earn more than childless white men, between 8 and 13 percent around age 20. After age 24, there are no statistically significant fatherhood wage premiums and no differences across racial groups.

In sum, contrary to Hypothesis 3 on higher premiums for fathers of many children, for all racial groups early adult fatherhood premiums are similar in magnitude irrespective of the number of children. In line with previous findings (Glauber 2007) and Hypothesis 4, fatherhood premiums are largest for white men and considerably lower for Black and Hispanic fathers. Mapping fatherhood premiums across the life course puts them into perspective in important ways. The fact that they are concentrated exclusively in very early adulthood suggest that they emerge more as an artifact of differential selection into fatherhood, higher education and employment in this specific brief life course stage. Contrary to (unadjusted) motherhood penalties, there is no enduring fatherhood premium over the life course that varies with the number of children in coherent ways.

Similar to women, the average hourly wages and household income of childless men and fathers of one, two or three and more children of different racial background inform about possible mechanisms driving these intersectional similarities. As can be seen in Figure 4, both white childless men and fathers have much higher household incomes (bottom) than Black and Hispanic childless men and fathers. Further, white fathers with two and with three or more children earn by far the highest hourly wages (top) compared to Black and Hispanic fathers. The earnings difference between white childless men and fathers is also much greater than the difference between Black and Hispanic childless men and fathers. This accounts for the large unadjusted fatherhood premium that we observe for white men, while observing no or only a negligible premium for fathers of color.



*Figure 4.* Average hourly wages (top) and household income net (bottom – NLSY79 only) for childless men and fathers

Note: Averages and 95% confidence intervals displayed; NLSY79 and NLSY97; Data weighted.

# Conclusion

In this study, our goal was to describe intersectional differences in parenthood wage gaps by gender and race and their persistence across the life course depending on the number of children. Based on previous research and our theoretical considerations, we hypothesized that compared to childless women within each racial group, mothers of three or more children suffer the largest and most persistent motherhood penalties across the life course (Hypothesis 1) and that the motherhood penalty is larger among white women of three or more children compared to Black and Hispanic women with many children (Hypothesis 2). Further, we hypothesize that fatherhood premiums are largest and most persistent for fathers of three or more children (Hypothesis 3) that fatherhood premiums are lower and less enduring for Black and Hispanic men (Hypothesis 4). We use data from the 1979 and 1997 National Longitudinal Studies of Youth (NLSY79 and NLSY97) with fixed effects modeling to compare the age-specific parenthood wage gaps for one, two, and three or more children for white, Black, and Hispanic men and women born 1957-1964 and 1980-1984. Our findings support our hypothesis, with the exception of hypothesis 3.

We seek to make two contributions to the literature. First, building on Kahn, García-Manglano, and Bianchi (2014) study on motherhood penalties over the life course, our results demonstrate the importance of life course timing. Motherhood wage penalties tend to be largest near age 35, while fatherhood premiums dissipate soon after age 25. This highlights the potential caveats of estimating the effects of parenthood on wages averaged across age groups (see Van Winkle and Struffolino 2018 for a similar argument related to in-work poverty). Both our motherhood penalty and fatherhood premium estimates would be considerably underestimated had we not focused on age heterogeneity. Particularly for men of any race, fatherhood premiums are concentrated in a brief early age range, in which white men enjoy much greater wage benefit from fatherhood compared to black and particularly Hispanic fathers. As early as age 25 these racial differences attenuate and men of all racial groups are equal in receiving no significant fatherhood wage premiums, irrespective of the number of children.

Second, extending Kahn, García-Manglano, and Bianchi (2014) and previous research on racial differences in parenthood wage gaps (Glauber 2007; 2008; 2018), we show variation in parenthood wage gaps and their persistence across the life course by racial background. Most racial differences in motherhood penalties disappear when adjusting for human capital factors, highlighting the crucial role of human capital accumulation for mothers to uphold their earnings potentially. Opportunities to accumulate human capital over the life course are gender and race-specific for childless and parents. Targeting differences in human capital thereby offers considerable leverage to reduce gender by race differences in parenthood wage gaps.

After adjusting for human capital differences, enduring motherhood penalties for having three or more children (Kahn, García-Manglano, and Bianchi 2014) are confined to white women and do not extend to Black or Hispanic women. Yet, the enduring motherhood penalty for white mothers of many children is indicative of white women's overall earnings advantage in two ways. First, it exists relative to the high wages of childless white women that are unattainable in large numbers for childless Black and Hispanic women (England et al. 2016).

Second, white mothers of many children do not suffer lower hourly pay than their Black or Hispanic peers, but enjoy considerably higher household incomes. White women of many children therefore on average face less economic pressure to contribute to household income compared to Black and Hispanic mothers of many children. Contextualizing the enduring wage penalty for white mothers of many children in this way highlights inequality between mothers and childless white women, as well as between women of different racial backgrounds, both childless and mothers.

Among fathers, our findings also corroborate higher premiums for white men, but put them into perspective of being concentrated in a very early brief time window of the adult life course for men of all racial backgrounds. Overall fathers of different racial backgrounds are more equal to childless men and among each other compared to women. They do not receiving any significant fatherhood premium over most of the early adult life course, irrespective of how many children they.

Our findings should be interpreted in light of several limitations. Pooling the two NLSY samples enabled detailed analyses of age-specific parenthood wage gaps by gender, race and parity. Yet the confidence intervals, particularly at very early ages and after age 35, when the analysis are only supported by the NLSY79 respondents are fairly large and should be interpreted with caution. The main conclusions of our study hold when focusing on effect sizes and age ranges well covered by our data. In addition, the underrepresentation of male fertility compared to female fertility in survey data is well known. In an analysis of the coverage of male fertility below age 25 in the NLSY79 and NLSY 97 Joyner et al. (2012) compared the data with data from the Vital statistics and the U.S census bureau and found that the NLSY samples offer fairly good coverage of male fertility. Underreporting of male fertility was stronger for Black men in the NLSY79, but only significant between ages 21 and 24. In the NLSY97 male fertility reports did not differ notable from census estimates, even for minority men. While there might be a slight underrepresentation of male fertility particularly for minority men with no or low earnings in our sample, we do not expect it to have a major effect on our estimates (Joyner et al. 2012). Finally, our possibilities to go deeper into the mechanisms generating intersectional differences in parenthood wage gaps by parity was limited by the available information in the NLSY, our study design that presented a large number of comparison groups to offer a full intersectional description of parenthood wage gaps over the life course, and precluded a direct examination of how overlapping employer discrimination by gender, race and parenthood contribute to wage differentials. We used the available information to show that different human capital endowment of parents of different racial background accounts for much of their wage gaps compared to their childless peers, and that higher average household income likely creates lower economic pressure for white mothers of many children compared to their Black and Hispanic peers.

Future research should extend our intersectional analyses by going deeper into the mechanisms that account for the intersectional differences in parenthood wage gaps across the life course and, for women, by the number of children. Do explanations, including discrimination, differential preferences for work and family or access to affordable childcare, differ across intersectional groups? Which role does social class play in these processes? Research has shown that motherhood penalties and fatherhood premiums vary greatly across

countries (Budig, Misra, and Boeckmann 2015; Cooke 2014). For example, medium length parental leaves and public childcare are associated with lower motherhood penalties only in countries where cultural support for maternal employment is high. Possibly, this literature is a useful starting point to examine the structural determinants of intersectional inequality in parenthood wage gaps also within single countries. For example, if social class stratifies access to childcare, and the average class location as well as gender and parenting norms vary across intersectional groups, opportunities to combine work and parenthood will differ greatly across these groups and, at least for mothers, also vary with the number of children.

Future research should also pay more attention to social class differences within and between gender and race groups. Recent research has focused on variation of the motherhood penalty across the earnings distribution using quantile regression (Cooke 2014; Budig and Hodges 2010; England et al. 2016; Killewald and Bearak 2014). Findings show that women at the bottom of the earnings distribution incur larger motherhood penalties than high earning women. In addition, several studies have pointed to heterogeneous effects of motherhood on wages by education and marital status, among others (Killewald and Gough 2013; Budig, Misra, and Boeckmann 2015; Kahn, García-Manglano, and Bianchi 2014). Our study showed that differences in the motherhood penalty by race are related to different wage levels of the childless reference groups. It would therefore be interesting to examine the selection into childlessness and the labor market position of the childless from an intersectional perspective by class, gender and race. Similarly the selection into having many children among men and women of different racial backgrounds likely is important in driving our results, for instance with a more positive socioeconomic selection of white women into having large families compared to minority women.

Our findings underline that simply controlling for race in analyses on parenthood wage gaps is unsatisfactory. The resulting averages factor out important variation across the life course, parities, and across intersectional groups that can guide future more explanatory analyses on gendered and racialized parenthood wage gaps.

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