

**The Effects of Parental Division of Employment on Child Outcomes During  
Adulthood**

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## **Abstract**

This paper offers an empirical analysis of the effects of division of employment between parent figures on future outcomes of children. Using propensity score matching, this study extends upon previous research to offer an understanding of the joint role played by maternal employment and that of a present or non-present husband. Data from the National Longitudinal Survey of Children and Young Adults and the National Longitudinal Survey of Youth 1979 are used to create and examine a comprehensive set of respondents' backgrounds and labor outcomes. Relative to children from two parent homes with only working fathers, children from two parent homes with part-time working mothers and non-working fathers appear to have less positive labor outcomes. Conversely, children with full-time working mothers without spouses in the home have more positive labor outcomes. These findings demonstrate the mediation of each parent figure on the role of the other in determining outcomes and suggest maternal work is beneficial to children, or plays no significant role, unless a mother has to support not only her children, but also her husband through her employment.

**JEL Classification:** J01; J12; J22

**Keywords:** Family Structure; Employment; Labor; Children; Maternal Employment; Paternal Employment

## **I. Introduction**

Since the onset of World War II, the world has seen a rise in the rates of female participation in the workplace. At the same time, women have been striving to slowly erode the stereotypes and barriers to labor equality that persist to this day. While the percentage of U.S. women in the workforce has climbed to almost 47% in a population that is 50.8% female, women's proportion of pay, responsibility, and leadership, as compared that of men, is far from equal (US Department of Labor, 2016). The image of women in work is further distorted when examining the subset of the female population consisting of mothers in married couple families, wherein the father is more than 32% more likely than the mother to be the sole earner (US Department of Labor, 2014).

Gendered views of the role of men and women in the workplace and in the household continue to create a disparity in the labor force participation of women. Despite evidence to suggest the positive role maternal employment can play in child outcomes, childbearing continues to influence exit from and entry into the formal labor force (Dunifon, Hansen, Nicholson, & Nielsen, 2013; Hsin, & Felfe, 2014; Drobnič, Blossfeld, Rohwer, 1999). Female labor force participation data, for example, show that mothers are staying out of the workplace at the highest rates when children are young and returning as children reach maturity. (US Department of Labor, 2016). Even before having children, women have been found to be more likely than men to decrease their current career aspirations in anticipation of future parenthood (Bass, 2015).

Despite traditional conceptions of parenting and employment division, gender roles within the family have nonetheless shifted over time, with mothers and fathers often viewed as

being equally capable of taking on the role of economic provider, caregiver, or both (Kalil, & Ziol-Guest, 2008). Here I consider the effect of differing divisions of employment between parent figures on the success and structure of the next generation in the labor force.

Previous literature exploring the relationship between parental employment and child outcomes focuses almost entirely on the role of maternal employment. The role of the father, or father figure, has been examined very little with the available work focusing on the impact of household involvement on children. While Kalmijn (2014) moves forward to examine the separate roles that maternal and paternal occupational status plays on children's academic progress, no research has attempted to understand the joint roles of men and women. This paper provides an extended understanding of the relationship between parental employment and child outcomes from the perspective of family employment rather than maternal employment in isolation. Family employment structure is defined in this paper as nine divisions of employment arising from each combination of maternal work characteristics (no work, partial work, full work) and spouse characteristics (no spouse present, no work, work)<sup>1</sup>.

This paper seeks to move beyond past research, which has focused only on the effects of parental employment on child outcomes in childhood, by focusing on longer-term impacts. While studies have historically focused on children's cognitive, behavioral, and motivational outcomes, this paper examines later effects on education and labor, such as educational attainment and employment status. A shift to emphasis on labor outcomes provides a window to understanding the cyclical nature of gender roles and labor from an intergenerational perspective.

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<sup>1</sup> Working status of husbands in this study is divided only into "work" or "no-work" and excludes part-time work. The added division would only add unnecessary complexity when, according to Pew Research Center, only about 10% of men worked part-time between 1980 and 2012. Almost 30% of women reported working part-time during this period (Suh, 2013).

This paper examines the likelihood of children entering the workforce based upon working status of their mother and father during childhood years. It investigates the relationship of success measures in the workplace to children of varying family structures, using propensity score matching to compare children of a each family structure based upon many descriptive and familial/historical variables.

## **II. Literature Review**

### **Maternal Effects on Child Outcomes**

The vast body of literature exploring the effects of maternal employment on child outcomes presents a mixture of arguments ranging from strong positive associations to strong negative ones. However, the most common finding within the literature suggests that maternal employment plays no significant role in child well-being. Research has demonstrated the lack of a significant relationship between maternal employment and development, behavior problems, compliance, self-esteem, academic progress, smoking, and life satisfaction (Bielby, 1978; Hoffman, 1989; Harvey, 1999; Kalil, & Ziol-Guest, 2008; Mendiola, 2016). Literature suggesting a less optimistic view, while pervasive, limits negative effects to small subsets of the population or to specific time-periods. For example, using multivariate regression on the 1986 Children of the National Longitudinal Survey of Youth, Desai, Chase-Lansdale, and Michael (1989) find a significant adverse effect of maternal employment on children's intellectual ability, but this holds only for male children in high income families where mothers return to work within the first year. Similarly, while Ruhm (2014) cites deleterious effects of maternal employment on cognitive development for children, results are driven by maternal employment

within the first year after birth; the author concedes that benefits of working in the next two years partially offset this relationship.

In other recent research, Lucas-Thompson et al. (2010) demonstrates in a meta-analysis of 69 studies that maternal employment, save for a few small exceptions, has no effect on later achievement or behavior. A recent study, utilizing a Danish dataset following children from birth through grade nine, finds that maternal employment in children's first three and first fifteen years has a positive effect on academic performance in all specifications when controlling for the mothers' education level (Dunifon, Hansen, Nicholson, & Nielsen, 2013). A study of US individuals using the Child Development Supplement of the Panel Study of Income Dynamics discredits the theory that maternal employment is detrimental to children due to a reduction in time spent with mothers, showing that mothers trade quantity of time for better quality of time (Hsin, & Felfe, 2014).

### **Paternal Effects on Child Outcomes**

As paternal employment is still considered to be the norm in society, little work has been done to understand the varying effects of a father figure working versus taking on a caregiving role at home. More recent research considers the effect of paternal household involvement on children, especially as fathers have begun to be accepted as equally capable of taking on a caregiving role. Research suggests that increased paternal involvement has beneficial impacts on intellectual development, social competence, and empathic ability of children (Radin & Russell, 1983; Snarey, 1993; Booth & Amato, 1994 ). Others have suggested, however, that paternal nurturance hinders the ability for boys to “develop a male identity” when roles of mothers and fathers experience overlap; this is marked by a lack of impulse control, inhibition of

assertiveness , and decreased academic performance (Kalter 1987). A study done to examine children's academic progress based on parent employment circumstances shows that involuntary employment separations of fathers is associated with higher likelihood of grade repetition and expulsion for children (Kalil, & Ziol-Guest, 2008). These findings serve to demonstrate that an undermining of traditional gender roles may persist in creating negative outcomes (Kalil, & Ziol-Guest, 2008). Alternatively, Hsin and Felfe (2013) find that fathers compensate for maternal employment in the household by increasing activities that have both positive and negative effects on child development. For example, the study finds an increase in unstructured time spent with children. Unstructured activities are defined as those requiring no engagement or verbal exchange, such as watching television, and are found to be negatively correlated with child behavior. Patterson (1995), in a study examining same-sex couples, determined that children were more well-adjusted, based on the Eder CSVQ Scale, when labor for child care was more evenly distributed between parents (Patterson, 1995).

This study aims to create a more complete understanding of the role a father figure plays in child outcomes through working as the sole provider, working in conjunction with the maternal head, or staying home.

### **Maternal Effects on Adult Outcomes**

Predominantly, research in the field has focused on child outcomes during childhood, however a handful of recent studies have begun to examine the effects of maternal employment on children in adulthood. One area of exploration in long-term outcomes has been the effect of maternal employment on the adult son within the household. It has been found that among married or cohabiting men, those who grew up with employed mothers spent more time on



housework than other men (Gupta, S., 2006). A study conducted by McGinn, Castro, and Lingo (2015), utilizing individual level data from the International Social Survey Programme 2012, found that men raised by working mothers spend an extra hour, on average, caring for family members per week. This same study also explored the long term effects for adults in the labor force cross-nationally, showing that daughters raised by mothers employed for at least a year are significantly more likely to be employed, and if employed, hold supervisory responsibility, work more hours per week, and earn higher incomes. A recent Danish study has reinforced these results, showing that maternal labor supply increases schooling of their children by 1.3 years and increases child earnings by 25 percent (Bingley, Jensen, & Nielsen, 2015). These emerging studies provide a basis for conceptualizing the effects of maternal employment on long-term outcomes and open a door for the future work that can be done to understand maternal employment's long term effects on labor outcomes and gender equality in the workplace.

### **III. Theoretical Framework**

This paper utilizes established bodies of literature surrounding socialization and stratification to form a theoretical framework for understanding the ways in which parental employment takes effect on offspring. In the following section, the socialization of gender ideologies, and the subsequent effects those ideologies have on children are explored. Following is a discussion of stratification, examining the ways in which resources move intergenerationally, differing by social or economic strata. The movement of resources from parent to child acts as a second mechanism through which employment outcomes of children may be affected by those of their parents.

## **Socialization**

According to Bandura's Social Learning Theory, individuals learn from one another via observation, imitation, and modeling (Bandura, 1977). Erik Erikson (1963) posits that socialization of children begins to take precedence during the second year of a child's life; it is during this period that children acquire beliefs, values, and behaviors that are deemed appropriate by society, as parents similarly become more engaged in teaching children how to behave (Hensch, Schaffer, & Kipp, 2010). At this time, children are exposed within the home to many attitudes, factors, beliefs, and actions that may influence their attitudes surrounding gender roles, with their first understanding of the distinction between 'male' and 'female' arising from parents (Witt, 1997). By the age of two and half children utilize gender stereotypes to navigate their world (Fagot, Leinbach, & O'Boyle, 1992; Cowan & Hoffman, 1986).

Given the role of parents in socializing gender ideologies in children as well as the importance of the parent-child relationship to development, many researchers have concluded that differing family structures, or degrees of traditionality, influence gender attitudes of children. In a qualitative study of gender-role identity and relationship satisfaction, adult children of parents sharing equal roles in parenting were found to have flexible gender role identities (Sasso, 2010). Wright and Young (1998) confirmed this assumption, finding that children raised in families headed by fathers are more likely to have traditional gender attitudes than those headed by mothers. This is important because egalitarian ideologies, versus traditional ones, have been found to positively influence earnings, paid work hours, and full-time employment for women (Stickney, & Konrad, 2007; Corrigan & Konrad, 2007; Christie-Mizell, Keil, Kimura, & Blount, 2007). Support of egalitarian roles for men and women in families is also positively

related to school enrollment, independent living, and aspiration to a postsecondary degree for both women and men in addition to full-time employment for women (Cunningham, Beutel, Barber, & Thornton, 2005; Davis, & Pearce, 2007).

Work done to examine the effect of role models outside the home can similarly be applied to mothers as a role models, reinforcing the positive effects of mothers on work of the child. For example, the increased presence of female politicians in national news directly impacts the indication of adolescent girls' intention to be active politically (Campbell, & Wolbrecht, 2006). Similarly, a study of women in India, exploiting a natural experiment during which leadership positions for women began to be reserved by law, provides a strong example of the positive role of female leadership. Results showed that increased female leadership caused gender gap aspirations to close by 32% in adolescents (Beaman, Duflo, Pande, & Topalova, 2012).

Previous literature serves to connect differences in ideologies to varying outcomes, specifically, non traditional or egalitarian gender ideologies to more positive outcomes and traditional ideologies to less positive outcomes, demonstrating a mechanism through which maternal and paternal division of employment can affect offspring.

### **Stratification**

While role-modeling of gender based attitudes and actions may be a substantial determinant of child outcomes, a large body of research has also been constructed to show that traits or resources move intergenerationally and may also play a role in these outcomes. Examination of the roles social and economic stratification play in the outcomes of the

subsequent generation must be considered when examining the role of parental employment structure on children.

Social stratification imparts differing values or resources on socially distinct subsets of the population; these values are then passed to children, therefore maintaining differences between classes (Kohn, Slomczynski, Schoenbach, 1986). Glass, Bengtson and Dunham (1986) verify in their study of attitude transmission within three generation families that status inheritance does in fact account for a large portion of parent-child similarity. A study of intergenerational mobility in Italy, as related to occupational status suggests that the success of children depends highly on the social status of their parents (Di Pietro & Urwin, 2003). Becker, Murphy, and Spenkuch (2015) argue that this effect is due to the fact that, even controlling for innate ability, wealthy parents invest more in their children than less affluent ones.

Many others suggest this effect occurs due to the passing down of some type of social resources. From this perspective, working mothers pass down essential resources for occupational success that non-working mothers do not possess (Menaghan and Parcel, 1991; Kalmijn, 1994; Rosenfeld, 1978). In their study of the intergenerational reproduction of women's paid work, Van Putten, Dykstra and Schippers (2008) divide the resources provided by mothers in different stratas into 3 categories: human capital, social capital, and financial capital, and suggest these as the streams through which a mother's occupational status may affect that of her child. According to the authors, human capital includes skills and behavioral etiquette that would allow an ease of entry into occupational fields. Social capital refers to a shared professional network and financial capital refers to the passing of income, separately from education.

In this section, I have established the similarity of values and behaviors that exist between generations, showing that these similarities are at least a partial result of the sharing of resources in some form; these resources inherently differ based upon social strata. These findings suggest that family structure may differ by educational attainment of parents. It also raises a question of whether two working parents, then, are better than one. Taken in combination with literature on socialization, the interaction of gender ideologies set by parents with the resources they pass down do not provide a clear hypothesis for the relative outcomes of children raised in each family structure type.

#### **IV. Methodology**

##### **Propensity Score Matching**

Propensity score matching (PSM) is used to observe the effects of varying family structures in comparison to a “traditional” family structure consisting of a non-working mother and a working spouse. PSM is a statistical matching technique that takes into account the probability of having received a treatment when examining that treatment’s effects. The goal of any experiment is to compare the outcomes of a treated group to that same group’s outcomes had they not been treated. While it is impossible to directly observe such counterfactuals, propensity score matching provides a very close estimate of this specification. All respondents are given a propensity score, or predicted probability of having received the treatment based on a set of background characteristics that would affect their likelihood of receiving that treatment, such as education or age. Each treated respondent is matched with one control observation based on this score, meaning an individual who received treatment is matched with an individual who did not

receive treatment but who exhibits large similarities to the treated individual in all other measured characteristics. The difference between the treated group and the control group is then estimated for a given outcome, demonstrating the effects the treatment had on the treated group.

PSM has been demonstrated to perform better than other econometric techniques in settings in which selection bias poses an issue (Dehejia & Wahba, 2002; Hill, Waldfogel, Brooks-Gunn, & Han). Due to social processes and underlying characteristics, beyond a given treatment, that push individuals towards certain behaviors and outcomes, selection bias is readily observed as an issue in the study of labor economics. PSM mitigates selection bias that arises by comparing a group to a like group based on the underlying characteristics that may have influenced the outcomes or likelihood of receiving a treatment for those individuals. As selection bias is the main cause of inconsistent findings common throughout literature on this topic, PSM is used here to offer a more robust means of examining average causal effects.

PSM also boasts certain advantages over the popular alternative techniques used within similar literature: OLS regressions, fixed effects, and instrumental variables. In linear regression models, all confounding covariates must be accounted for, which leads to the use of many variables, often introducing multicollinearity. Additionally, PSM takes into account the differences in characteristics demonstrated by treated and untreated groups and summarizes the effects of receiving treatment for only those who received it; this is in contrast with an ordinary least squares regression that generalizes outcomes to the entire observed population. Family fixed effects have been used in some literature to more accurately control for characteristics of the family that do not vary across children. While this is a more robust specification, it severely limits the population to families with both multiple children and varied employment patterns

across those children. The use of instrumental variables is also inadequate in this setting, as good instruments have not been identified to sufficiently predict treatment.

## **Measures**

A probit model is used to create propensity scores and takes into account variables considered likely to have affected both the likelihood of receiving treatment (a given family employment structure) and child employment outcomes. I utilize the following characteristics: race, year of birth, sex, birth order, mother's age at the birth of the child, mother's religious attendance, mother's educational attainment, parent family income, and characteristics of the mother's background at age 14 including her whether she lived in or outside of the US, whether she lived in an urban, rural, or farm setting, and what guardians were present in her home.

Race and religious attendance reflect potential differences in family values and the emphasis placed on gender roles, work, and caregiving. The age of mothers at childbirth affects the likelihood of remaining in the workforce. Older mothers, for example, may have a level of financial stability that offers the option to stay home with the child. Child birth year influences the gender attitudes of the environment in which the child grew up and ideologies that may be most familiar to them, although the effect should be small given the small window of years during which respondents in this study were born.

Literature suggests the need to account for birth order, as first born children are often treated differently by parents than subsequent children (Jacobs & Moss, 1976; Hotz & Pantano, 2015). These birth order effects have been found to create differences in parent-child relationships and wellbeing (McHale, Crouter, McGuire, & Updergraff, 1995). Similarly, the

number of children already in the household has been determined to affect the likelihood of a mother to return to work (Zhu, 2012).

Education, family income, and maternal background characteristics at age 14 are included in order to align respondents in control or treatment groups based on the resources and models they were exposed to growing up. Income and education of parents directly relates to employment structure, as research cites that stay at home mothers tend to be poorer and less educated than working mothers (Cohn & Caumont, 2014).

### **Empirical Specification**

Propensity score matching allows for a comparison between observations of a treated group and a non-treated or control group, where  $D=1$  represents treated and  $D=0$  represents untreated observations.

Control group: Working husband, non-working mother

Treated groups:

- Single working mother (part-time or full-time)
- Single non-working mother
- Working mother (part-time or full-time) and non-working husband
- Two working spouses (mother part-time or full-time)
- Two non-working spouses

First, a probit model is used to determine the propensity of observations to be assigned into the treated group. Variables determined to have affected the likelihood of being assigned to such treatment group are used as predictor variables. This probit regression creates a single propensity score for each observation, which is the conditional predicted probability of receiving treatment given pre-treatment characteristics  $x$ .

$$p(x_i) = \text{prob}(D=1 | x_i) - E(D=0 | x_i)$$



Predictor Variables ( $x_i$ ):

- Race
- Year of birth
- Sex
- Birth order
- Mother age at birth of child
- Mother's religious attendance
- Educational attainment mother (AFQT score)
- Family income
- Mother's background at age 14
  - US or non-US residence
  - Urban/rural/farm residence
  - Guardians present

Treatment observations are then matched with control observations based upon the singular propensity score. I use one-for-one, nearest neighbor matching with replacement. This means that every treated observation  $i$  is matched with one control observation  $j$  that has the closest propensity score  $x$ ; matching with replacement allows the same control observation to act as the match to multiple treatment observations.

$$\min || p_i - p_j || \tag{1}$$

After matching, I examine the treatment effects and compare outcomes ( $y$ ) between the treated and control observation:

$$Y = \begin{cases} y_1 & \text{if } D=1 \\ y_0 & \text{if } D=0 \end{cases} \tag{2}$$

Conceptually, the average treatment effects on the treated (ATET) would be the difference between the outcomes of the treated and the predicted outcomes of the treated had they not received the treatment:

$$ATET = E(\Delta | D=1) = E(y_1 | x, D=1) - E(y_0 | x, D=1) \tag{3}$$

The last term in the specification above, however, cannot be observed as the treatment cannot be stripped out of the treated group. Propensity scores are therefore used to estimate this equation (Katchova, 2013):

$$ATE = E(\Delta | p(x), D=1) = E(y_1 | p(x), D=1) - E(y_0 | p(x), D=0) \quad (4)$$

$$ATE = 1/n_1 \sum [y_{1,i} - \sum (i, j) y_{0,j}] \quad (5)$$

$N$  represents the total number of observations. Average treatment effects on the treated group are separately examined for the following outcome variables: highest grade completed, highest degree earned, employment status, hours worked per week, income, and work benefits.

## V. Data

Data come from two National Longitudinal Surveys sponsored by the U.S. Bureau of Labor Statistics: the National Longitudinal Survey of Youth 1979 and the National Longitudinal Survey of Children and Young Adults. The NLSY79 consists of 12,686 male and female respondents who began the survey between the ages of 14 and 21. Respondents of the Children and Young Adult survey include all of the children born to the NLSY79 cohort. Interviewing began in 1986, at which point children of the 1979 respondents were between 0 and 23 years of age. Data from each survey are merged using a common identification number within the surveys of both the mother and child.

All respondents are included for whom interviews were available from the time of their birth through the age of 25, the age at which respondents' respective labor outcomes are measured in this study. Due to the availability of data spanning from 1979 to 2014, studied respondents are therefore restricted to those born from 1979 through 1989, with respondents maturing to age 25 between 2004 and 2014. While large differences between respondents due to

birth year should not be prevalent, age is included in creating propensity scores and is thus controlled for in its role in determining family employment structure.

**Treatment Variables**

**Chart 1.** Treatment and Control Group Composition (# of observations) and Naming

		Spouse Characteristics (S)		
		No Work (0)	Work (1)	Spouse Absent
Mother Characteristics (M)	No Work (0)	M0S0 160	M0S1 1,491 <i>Control</i>	M0 1,252
	Some Work (1)	M1S0 63	M1S1 1,157	M1 739
	Full Work (2)	M2S0 14	M2S1 600	M2 319

*Note: M2S0 group consists of insufficient observations for running propensity score matching and determining outcomes*

The creation of propensity scores relies on the predicted probability of receiving a treatment or not receiving a treatment based on given characteristics. This means that to determine outcomes each distinct treatment group must be compared to a clear control group. In this study, I create eight discrete treatment groups, each of which is individually compared to the control group through PSM. Each treatment group represents a unique employment structure. The eight treatment groups, M0S0, M1S0, M2S0, M1S1, M2S1, M0, M1, and M2, are defined based on the conjunction of the maternal and spousal employment characteristics. Maternal characteristics (M) are denoted as no work (0), partial work (1), or full work (2), and spousal characteristics (S) are denoted as no work (0), work (1), or are absent in the case of a single mother household. The group representing “non-working mother and working spouse,” named

M0S1, acts as the control or comparison group. Each group is constructed based on variables measuring marital status, employment status, and hours worked per year. Further details on the variables used and questions asked within the surveys can be found in Appendix A.

Marital status, reported yearly in the NLSY79, is collected for the ten years following the birth of the child respondent. Those married and cohabiting for the majority of the 10 years (or the majority of the years in which they responded to the survey question within those 10 years) are placed within the ‘dual household’ group (represented by both maternal and spousal work characteristics). Those non-cohabiting for the majority of the time are placed within the ‘single mother’ group (those represented by only maternal work characteristics).

Each group is then split based on the work habits of the mother. I similarly gather employment status for the ten years following the birth of the child and designate mothers as not working, working partially, or working full-time in each of the ten years and then summarize the ten years to create a single value for each mother. The designations for each individual year are determined based on the number of hours worked per year by each mother. Those working less than 1,350 hours per year are labeled as non-working, those working more than 2,086 hours as working full-time, and those falling in between as working part-time. 2,086 hours is the National Standard for full-time work in the US, representing an average of 40 hours per week for 52 weeks in the year (OPM). 1,350 hours, the cutoff for part time work used here, represents an average of 26 hours per week for 52 weeks in the year.

The ten year span is then summarized for each mother in order to assign each individual a value single value of 0, 1, or 2 as described above. Those doing *no work* for at least 70% of the

years are assigned 0, those doing *full work* for at least 60% of the years or work in some form at least 80% of the years are assigned 2, and those falling in-between are assigned 1.<sup>2</sup>

The group of individuals designated as ‘dual household’ is further broken down by employment of each woman’s spouse. Spouse employment is collected from the NLSY79 survey from a series of questions asking how many hours the respondent’s spouse usually worked per week and how many weeks that spouse worked per year for the ten years following the birth of the child. In each year, men who worked less than 1,350 hours per year are considered non-working and those who worked at least 1,350 hours per year are considered working. Those who worked at least 60% of the time over the 10 year period are assigned 1 and those working less are assigned 0.<sup>3</sup> A summary of the number of observations belonging to each family employment type can be reviewed in the chart at the beginning of this section. Due to a very small number of observations meeting the criteria for both a full-time working mother (M2) and a non-working husband (S0), the M2S0 group was insufficient for creating propensity score matches, and was therefore left out of the results section.

### **Background Variables**

Background characteristics such as sex, race, year of birth, and age of mother at birth of the child are collected. Birth order is determined by the number of children in the household at the time of birth of the relevant child in each observation. Religious attendance of the mother is similarly captured at the time of birth of each child and family income is derived from a

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<sup>2</sup> For maternal work, number of hours worked per year was constructed in the data set for every observation. The dataset provided a variable to be used in conjunction with said variable, which reported the number of weeks that were left unaccounted in the calculation of each observation. Observations were dropped from the dataset if they were missing more than 25 weeks per year for more than 4 years. For single mothers, 291 of 2,601 observations were dropped, and for dual-parent households, 850 of 4,449 observations were dropped.

<sup>3</sup> Paternal work data was gathered from two reported variables: hours worked per week and weeks worked per year. These were multiplied to determine a value for average hours worked per year. Missing values for either variable in a given year created a missing value for total hours worked in that year. If 4 or more years were missing, the observation was dropped. A total of 114 observations were dropped.

composite of income values for the respondent and those related by marriage in the year of birth of the child. Maternal education is proxied by each mother’s score on the Air Force Qualification Test in 1982, a test demonstrating general cognitive ability. Finally, background characteristics of each mother, such as her type of residence (US or non-US and urban, rural, or farm) and the guardians present in her life, are collected based on experiences at age 14. A more detailed outline of the background variables used can be found in Appendix B and a summary of select demographic characteristics can be found below.

**Table 1.** Select Demographic Statistics

<b>Sex of Child</b>	
Male	2,996
Female	2,799
<b>Race of Child</b>	
Hispanic	1,209
Black	1,758
Non-Hispanic, Non-Black	2,828
<b>Family Religious Attendance</b>	
None	879
Infrequent	1,441
Couple x per month	1,360
Once + per week	2,108

### **Outcome Variables**

To understand the consequences of parental employment on children during adulthood, I chose a set of variables as indicators of labor decisions and success: highest grade completed, employment status, hours worked per week, and earnings. In Appendix D and Appendix E

benefits and degree earned are additionally examined as outcomes for each observation. For all variables excluding highest grade completed and highest degree earned, respondents were assessed at age 25, an age cited by many economists as beginning the range of prime working years (OECD, 2017).

A variable for income is constructed utilizing a question asking respondents how much they received from wages, salary, commission, or tips from all of their jobs during that year before deductions and taxes. Amount of time spent working by the respondent includes the number of hours the adult child typically worked per week at all of their jobs. Respondents were asked about the type of benefits that were made available to them by their employer, including whether or not they received medical, surgical, and hospital insurance that would cover injuries and major illnesses off the job, life insurance, dental benefits, and a retirement plan beyond social security. An outline of all outcome variables used can be found in Appendix C.

Before controlling for covariates, positive correlations can be seen between the hours per week a mother works in the 7th year after the birth of her child and the child’s income and highest degree completed. Increased maternal work is also negatively correlated with unemployment.

**Table 2.** Correlations Between Child Outcomes in Adulthood and Maternal work

<b>Adult Child Outcomes</b>	<b>Degree of Mother’s Work (0, 1, 2)</b>
<b>Total Income</b>	0.0853
<b>Unemployed</b>	-0.0651
<b>Highest Degree completed</b>	0.1255

## VI. Results

**Table 3.** Comparison of Average Treatment Effects on the Treated Children from Two Parent Families Relative to Group M0S1 (Non-working mother, Working husband)

<b>Treatments:</b>	<b>M0S0</b> (Non-working mother, non-working husband)	<b>M1S0</b> (Part-time working mother, non-working husband)	<b>M1S1</b> (Part-time working mother, working husband)	<b>M2S1</b> (Full-time working mother, working husband)
<b>Child Outcomes at 25 Years of Age</b>				
Total income	-1627.088 (0.627)	-2586.226 (0.606)	1385.347 (0.404)	487.1749 (0.816)
Highest grade completed	-.0566038 (0.909)	<b>-1.434783**</b> (0.050)	-.0657895 (0.733)	.1563518 (0.498)
Employed	.0263158 (0.733)	<b>-.0857143**</b> (0.020)	.04323 (0.234)	-.0256757 (0.531)
Work full-time	0 (1.000)	<b>-.1714286***</b> (0.000)	.0187602 (0.623)	.0013514 (0.975)
Work part-time	.0263158 (0.531)	<b>.0857143***</b> (0.001)	.0244698 (0.208)	-.027027 (0.335)

*P-values in Parentheses*  
\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

*Note.* The table compares each parental employment type to a control group, M0S1, or one in which the mother is non-working and her spouse is working.

M represents 'Mother', and the value denoted to the right of M, 0, 1, or 2, represents her degree of work. S represents 'Spouse', and the value denoted to the right of F, 0 or 1, represents his working or not.

Work full-time represents working greater than 30 hours per week with part-time representing fewer than 30 hours but greater than 0.



**Table 4.** Comparison of Average Treatment Effects on the Treated Children from Single Mother Families Relative to Group M0S1 (Non-working mother, Working husband)

<b>Treatments:</b>	<b>M0</b> (Non-working mother)	<b>M1</b> (Part-time working mother)	<b>M2</b> (Full-time working mother)
<b>Child Outcomes at 25 Years of Age</b>			
Total income	<b>-5397.104**</b> (0.033)	-2395.738 (0.301)	-2522.303 (0.449)
Highest grade completed	<b>-.6132479**</b> (0.030)	-.1272727 (0.662)	-.2291667 (0.539)
Employed	-.1022556 (0.178)	.0473146 (0.360)	<b>.1534091**</b> (0.026)
Work full-time	-.0662651 (0.235)	.0822622 (0.121)	.0795455 (0.251)
Work part-time	-.0384036 (0.503)	-.0257069 (0.324)	<b>.0738636**</b> (0.010)

*P-values in Parentheses*  
\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

*Note.* The table compares each parental employment type to a control group, M0S1, or one in which the mother is non-working and her spouse is working.

M represents 'Mother', and the value denoted to the right of M, 0, 1, or 2, represents her degree of work.

Work full-time represents working greater than 30 hours per week with part-time representing fewer than 30 hours but greater than 0.

The analysis shows that compared to children from two parent homes with only working fathers (M0S1), children from two parent homes with only part-time working mothers (M1S0) have less positive labor outcomes. Children from such homes are shown to have lower levels of educational attainment and are more likely to be unemployed and work fewer hours. These results must be attributed to the conjunction of maternal and paternal roles, as non-statistically significant results from other divisions in which mothers are working suggest that negative effects are not accounted for simply by the presence of employment of the mother. For example,

when the mother is working either part-time or full-time in addition to a working spouse (M1S1 or M2S1), there are no statistically significant differences from the control group.

The conjunction of part time maternal work and no spousal work may serve to create more negative outcomes for a few reasons. First, in comparing M1S0 to M0S1, the former case may suggest less total work being done for the family as M1 denotes only part time work for the mother whereas in many cases S1 would represent full time work of the spouse. According to the principles outlined in theories of stratification, less total work, even while holding income constant, could reduce the quantity of valuable resources passed down to children (Menaghan and Parcel, 1991; Kalmijn, 1994; Rosenfeld, 1978). As a sufficient set of observations meeting the criteria for the full-time working mother and non-working spouse group (M2S0), the direct opposite of the control, is not available in the data, this study is unable to observe how a household led only by full-time maternal work compares to one led only by full-time paternal work. Because of this, no concrete conclusions can be made about the relative implications of the work done only by a father or only by a mother.

The results in Table 4 verify that compared to the same control group (M0S1), children with full-time working mothers without spouses in the home (M2) have more positive labor outcomes in some areas. Specifically, children from this group at 25 are more likely to be employed or work at least part time. These findings, in combination with those discussed above, suggest that maternal work is beneficial, or not detrimental, to children unless a mother has to support not only her children, but also her husband through her employment. Positive labor outcomes in certain settings resulting from increased maternal employment, as observed here, are consistent with previous literature. For example, maternal work introduces more egalitarian roles

to children which has been proven to lead to later success in school and work (Cunningham, Beutel, Barber, & Thornton, 2005; Davis, & Pearce, 2007). Furthermore, these observations are again consistent with the theories of stratification, suggesting maternal work allows for an additional possible stream of resources from parents to children which ensure their later success (Menaghan and Parcel, 1991; Kalmijn, 1994; Rosenfeld, 1978).

Results also demonstrate negative outcomes for children of single non-working mothers (M0). These children complete fewer years of schooling and comprise the the only group for which a decrease in income is observed. This finding is consistent with an inability to demonstrate gender equality in work, as well as a discrepancy in the passing of resources needed to succeed in the labor force. A mother working part-time, however, shows no statistical difference from a family in which the father-figure works and the mother does not.

The results are ultimately limited by the sample sizes created when the observed population is broken down into nine groups representing different divisions of employment within a family. Propensity score matching is best used with a very large sample of control observations and a small sample of treatment observations so that there is a large pool from which to find matches to each treatment observation's propensity score. In this study, groups such as M1S1 and M0 were nearly as large as the control group, meaning that there was a smaller pool from which matches could be drawn in comparison to the pool of observations needing matches. This may have led to decreased statistical significance in the results of particular groups. It should be noted, however, that the propensity scores of the treatment and control groups generally occupied the same range of values, meaning that although the pool was small, the values were similar and the accuracy of matching was still high.

## **VII. Conclusion**

This study provides an extended outlet for understanding the impact of parental role modeling and labor outcomes for children. Looking at long-term outcomes, it goes beyond an exploration of childhood behavior or academic outcomes to examine how the impact of employment manifests in labor tendencies. It suggests a means for gender roles and resources to maintain certain patterns intergenerationally, but also shows that there is no absolute outcome that suggests that a mother or a father's work has unambiguous effects on adult child outcomes beyond income effects.

The results demonstrate that child outcomes are not a simple product of either a mother's habits or a father's. Rather, they are best understood in the context of family structure and the way parents have divided their employment among themselves. As in different cases working mothers were shown to have both positive and negative outcomes, as were husbands, it is clear that family relationships are complex. While it is a natural tendency to want to break apart a family into its smallest units in order to understand its composition and place responsibility on a single unit, these units mediate one another in countless ways. Understanding the differences in child outcomes based on family structure types offers a new way to conceptualize how both mothers and fathers come together to influence children in labor.

As gender role attitudes and family structures continue to change, future research has the opportunity to gain greater insight into the ways that family organization affects children in adulthood. The conclusions made by this study are severely limited by the scarcity of families in which a mother worked full time with a stay-at-home father. As these types of families become more prevalent and more robust data becomes available, future research will be able to more

accurately understand stay-at-home fathers, as well as the true benefits and limitations of full-time working mothers. Extensions of this work can help elucidate improvements that can be made in workplace accommodations to give women and men the best chance to succeed in work without taking away from the roles they play in the lives of their children. Additionally, future work has the opportunity to examine same-sex couples, data which would provide unique insights into the role that socialization of gender plays in child outcomes.

This paper demonstrates the need to examine overall family structure as it relates to employment when attempting to understand parental employment's role on child outcomes. There is a great deal more to understand about the mechanisms through which parents affect the outcomes of their children in the labor force. Moving forward researchers should more intimately examine the passing of employment resources from parent to child in the context of family structure and should make use of the expanding pool of families that veer from the path considered traditional for so long.

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**Appendix A. Description of Variables Used in the Creation of Treatment Groups**

<b>Variable</b>	<b>Survey Title</b>	<b>Description</b>
Marital status	MARSTAT-KEY	Marital status
Mother employment- Hours per year	HRSWK-PCY	Number of hours worked in past calendar year *created
Mother employment- Unaccounted for data	WKSUNACCT-PCY	% of weeks unaccounted for in calculating weeks worked in past calendar year *created
Husband employment- Weeks per year	Q2-15A	During the 52 weeks of 1987, how many weeks did your (most recent) (husband/wife) work at all jobs, either full-time or part-time, not counting work around the house?
Husband employment- Hours per week	Q2-15B	In the weeks your (most recent) (husband/wife) worked, how many hours did (he/she) usually work per week?

## Appendix B. Description of Background Variables

Characteristic	Survey Question Name	Description	Variables Used
Race	SAMPLE_RACE	R's racial/ethnic cohort from screener	<ul style="list-style-type: none"> <li>Hispanic (0/1)</li> <li>Black (0/1)</li> <li>Non-hispanic, non-black (0/1)</li> </ul>
Year of birth	CYRB	Date of birth of child - year	<ul style="list-style-type: none"> <li>Year (continuous)</li> </ul>
Sex	SAMPLE_SEX	Sex of r	<ul style="list-style-type: none"> <li>Male (0/1)</li> <li>Female (0/1)</li> </ul>
Birth order	NUMCH	Number of bio/step/adpt children in household *created	<ul style="list-style-type: none"> <li>1st born: # of children in hh=0 (0/1)</li> <li>2nd born: # of children in hh=1 (0/1)</li> <li>3rd + born: # children in hh &gt; 1 (0/1)</li> </ul>
Mother's age at birth	MAGEBIR	Age of mother at birth of child	<ul style="list-style-type: none"> <li>Age (continuous)</li> </ul>
Mother's religious attendance	R_REL-3	In the past year, about how often have you attended religious services--more than once a week, about once a week, two or three times a month, about once a month, several times or less during the year, or not at all? 1 not at all 2 infrequently 3 once per month 4 2-3 times per month 5 once per week 6 > once per week	<ul style="list-style-type: none"> <li>Religious attend. zero: respondent answered 1 (0/1)</li> <li>Religious attend. Infrequent: respondent answered 2 (0/1)</li> <li>Religious attend couple x per month: respondent answered 3 or 4 (0/1)</li> <li>Religious attend. One + x per week: respondent answered 5 or 5 (0/1)</li> </ul>
Educational attainment (AFQT score)	AFQT-1	Profiles, armed forces qualification test (afqt) percentile score - 1980	<ul style="list-style-type: none"> <li>Percentile score (continuous)</li> </ul>
Family income	TNFI_TRUNC	Total net family income in past calendar year *created	<ul style="list-style-type: none"> <li>Income (continuous)</li> </ul>
Mother background: US or non-US residence	FAM-5	Now let's talk about when you were 14 years of age. where were you living then? <ul style="list-style-type: none"> <li>us</li> <li>non us</li> </ul>	<ul style="list-style-type: none"> <li>US (0/1)</li> <li>Non-US (0/1)</li> </ul>

<p>Mother background: urban/rural/farm</p>	<p>FAM-6</p>	<p>Which of the categories on this card best describes where you (are/were) living (when you were 14 years old)?</p> <ul style="list-style-type: none"> <li>● in town or city</li> <li>● in country- not farm</li> <li>● on farm or ranch</li> </ul>	<ul style="list-style-type: none"> <li>● Urban (0/1)</li> <li>● Rural (0/1)</li> <li>● Farm (0/1)</li> </ul>
<p>Mother background: guardians present</p>	<p>FAM-7</p>	<p>Please take a look at this card and tell me with whom you (are/were) living (when you were 14 years old). (list of family member combinations provided)</p>	<ul style="list-style-type: none"> <li>● Mother at age 14 lived with father and mother (0/1)</li> <li>● Mother at age 14 lived with step-father and mother (0/1)</li> <li>● Mother at age 14 lived with just mother (0/1)</li> <li>● Mother at age 14 lived with other combination of relatives (0/1)</li> </ul>

## Appendix C. Description of Outcome Variables

Characteristic	Survey Question Name	Description	Variables Used
Total income	Q15-5-TOP	During 2007, how much did you receive from wages, salary, commissions, or tips from all (other) jobs [-military or civilian-] before deductions for taxes or anything else?	<ul style="list-style-type: none"> <li>Income (continuous)</li> </ul>
Highest Grade	HGC2014	Highest grade of school completed as of 2014	<ul style="list-style-type: none"> <li>Grade (continuous)</li> </ul>
Employed	WORK	Work status at date of interview *created <ul style="list-style-type: none"> <li>0: no current job at date of interview</li> <li>1: working 30 or more hours per week at date of interview</li> <li>2: working less than 30 hours per week at date of interview</li> </ul>	<ul style="list-style-type: none"> <li>Employed: Respondent answered 1 or 2 (0/1)</li> </ul>
Full-time	WORK	Work status at date of interview *created <ul style="list-style-type: none"> <li>0: no current job at date of interview</li> <li>1: working 30 or more hours per week at date of interview</li> <li>2: working less than 30 hours per week at date of interview</li> </ul>	<ul style="list-style-type: none"> <li>Full-time: Respondent answered 1 (0/1)</li> </ul>
Part-time	WORK	Work status at date of interview *created <ul style="list-style-type: none"> <li>0: no current job at date of interview</li> <li>1: working 30 or more hours per week at date of interview</li> <li>2: working less than 30 hours per week at date of interview</li> </ul>	<ul style="list-style-type: none"> <li>Part-time: Respondent answered 2 (0/1)</li> </ul>
Highest degree	HSTDEGREE2014	highest academic degree received as of 2014 <ul style="list-style-type: none"> <li>0 No degree</li> <li>1 GED</li> <li>2 HS diploma</li> <li>3 Associate's degree</li> <li>4 Bachelor of arts</li> <li>5 Bachelor of science</li> <li>6 Master's degree</li> <li>7 PhD</li> <li>8 Professional degree</li> </ul>	<ul style="list-style-type: none"> <li>Degree level (continuous)</li> </ul>

Benefits: Life Insurance	QES-84F.01	[Does/Did] your employer make available to you ... Life insurance that would cover your death for reasons not connected with your job?	<ul style="list-style-type: none"> <li>• Life insurance (0/1)</li> </ul>
Benefits: Dental Insurance	QES-84G.01	[Does/Did] your employer make available to you ... Dental benefits?	<ul style="list-style-type: none"> <li>• Dental Insurance (0/1)</li> </ul>
Benefits: Retirement beyond SS	QES-84I.01	[Does/Did] your employer make available to you ... A retirement plan other than social security?	<ul style="list-style-type: none"> <li>• Retirement (0/1)</li> </ul>

**Appendix D.** Comparison of Average Treatment Effects on the Treated Children in Two Parent Families Relative to Group M0S1

<b>Treatments:</b>	<b>M0S0</b>	<b>M1S0</b>	<b>M1S1</b>	<b>M2S1</b>
<b>Child Outcomes at 25 Years of Age</b>				
Highest degree	-.0943396 (0.596)	<b>-.8695652*</b> (0.064)	-.0372807 (0.760)	.0130293 (0.933)
Benefits: Life Insurance	0 (1.000)	-.1428571 (0.280)	<b>.710456*</b> (0.234)	<b>.1152174**</b> (0.025)
Benefits: Dental Insurance	.15625 (0.110)	<b>-.1818182**</b> (0.020)	.0247396 (0.405)	.01875 (0.609)
Benefits: Retirement beyond SS	.0333333 (0.757)	.0952381 (0.513)	-.0066489 (0.860)	-.0407725 (0.392)
<i>P-values in Parentheses</i> * <i>p</i> <.10 ** <i>p</i> <.05 *** <i>p</i> <.01				

*Note.* The table compares each parental employment type to a control group, M0S1, or one in which the mother is non-working and her spouse is working. M represents ‘Mother’, and the value denoted to the right of M, 0, 1, or 2, represents her degree of work. S represents ‘Spouse’, and the value denoted to the right of F, 0 or 1, represents his working or not.

**Appendix E.** Comparison of Average Treatment Effects on the Treated Children in Single Parent Families Relative to Group MOS1

<b>Treatments:</b>	<b>M0</b>	<b>M1</b>	<b>M2</b>
<b>Child Outcomes at 25 Years of Age</b>			
Highest degree	-.232906 (0.129)	-.0872727 (0.603)	-.0555556 (0.837)
Benefits: Life Insurance	-.09375 (0.178)	-.099502 (0.863)	.0588235 (0.026)
Benefits: Dental Insurance	.0201342 (0.869)	-.014218 (0.714)	.0363636 (0.408)
Benefits: Retirement beyond SS	<b>-.1145833*</b> (0.058)	.0472637 (0.481)	.0097087 (0.882)
<i>P-values in Parentheses</i> <i>*p&lt;.10 **p&lt;.05 ***p&lt;.01</i>			

*Note.* The table compares each parental employment type to a control group, MOS1, or one in which the mother is non-working and her spouse is working. M represents ‘Mother’, and the value denoted to the right of M, 0, 1, or 2, represents her degree of work.