Effect of Parental Employment Status on Child Care

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Abstract

Parents spend a significant amount of time and income on raising children. Existing literature shows that parental unemployment has detrimental long-term effects on child development. My study focuses on the short-term impact of unemployed parents in their time investment. Using an instrumental variable approach and the American Time Use Survey (ATUS), I study if individuals who were laid-off or have been unemployed reallocate the time that was spent at work by spending more time with their children. I find that when unemployed, parents spend more time with their children than looking for new employment opportunities in the short-run. The short-run effects of unemployment are opposite of long-run effects and favorable for children. This behavior is consistent among all races and sexes.

1 Introduction

Changes in business cycle can cause unemployment to rise, forcing workers to quit the labor market, thus affecting their daily time schedules. This paper attempts to analyze how unemployment, in the short run, affects daily time schedules of parents. I used state-level unemployment rate as an indicator for the business cycle change. Using an instrumental variable (IV) approach, I studied if individuals who were laid-off or have been unemployed, reallocate their time, earlier spent at work, on other activities such as household chores, leisure, child care and job search. I find a 32 percentage points rise in time spent with children when parents become unemployed due to an economic slowdown, and only a 4-percentage point increase in time spent on exploring new employment opportunities. My study emphasizes on the behavioral change of those unemployed for a few months. I conclude that parents tend to focus on their children more than looking for new jobs when unemployed in the short run. The results are more intriguing when we focus on various demographics separately.

Time and income spent by parents are the two key ingredients for producing children (Becker (1988)). I define parental time as the time spent by parents with their children, and parental income as the income spent on purchasing goods and services for the children. Higher parental income implies access to high quality market goods such as education, health care and toys. Children also require adequate time investment from their parents for their stable growth and development. It helps in forming bonds, monitoring growth, and providing stability in a child's life. An efficient combination of income and time provides an appropriate environment for child development. Parents want to furnish such pertinent atmosphere in the household.

A sudden loss in employment results with individuals having more time and

less income. An unexpected lay-off is equivalent to a reduction in opportunity cost because the wage rate equals the opportunity cost of parent's time. The opportunity cost of parent's time does not, of course, equals zero as the parent can also engage in alternative productive activities such as household chores or other income-generating hobbies. A reduction in the opportunity cost of a parent's time can be separated into income effect and substitution effect. If the lay-off is considered to be short-term and perceived as temporary by the unemployed individuals, the effect on permanent income will be negligible. Parents will use their savings to smoothen consumption in the near future after being unemployed (this is in accordance to Franco Modigliani's Life Cycle Hypothesis). So, I can ignore the income effect and conclude that the total effect of short-term unemployment is driven by the substitution effect, causing parents to spend more time with their children without changing parental income.

Consequently, it is surprising that we find unemployment has little effect on the amount of time parents spend with their children using the OLS method [1]. The OLS estimates indicate that a change in business cycle conditions, given by a unit increase in the state level unemployment rate, is associated with 0.02 percentage points higher parental time with their children.

Studying the descriptive statistics, I find very little difference between the employed and unemployed parents in their allocation of time on child care. One might imagine, given that the unemployed will have more time at their hands, they will spend extra time with their children. However, they do not do so. This is because unemployed individuals are different from employed workers and hence, have distinct demand for leisure. This preference for leisure might carry over to their allocation of time for childcare. When previously employed individuals lose

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[1] The OLS estimates are very small in magnitude and statistically insignificant at conventional levels for most demographics. These analyses were conducted but excluded from the paper.

their jobs, their behavior might be different.

The IV approach allows me to evaluate how those, who are more likely to be unemployed due to an economic slowdown, change their time allocation when unemployed. If I could perform a randomized control trial experiment where employed workers are unexpectedly unemployed, I could observe the effect of unemployment on the allocation of time for childcare and other activities. Since such an experiment is not possible, I propose the use of an instrumental variable to account for the possibility that employment status is endogenous.

The IV estimation method allows me to analyze the above relationship effectively. The underlying intuition is that the effect of loosing employment on parental time is basically the effect of business cycle conditions (the IV), as measured by the state level unemployment rate, on parental time allocation (the outcome). Employed workers will not respond to business cycle conditions if their employment status is unaffected. The IV estimates are higher in magnitude and statistically significant at conventional levels. The effect of the business cycle conditions (the instrument) on the treatment (employment status), that is the "first-stage regression" has statistically significant estimates which are high in magnitude [2]. In my analyses, using the IV strategy helps me recover a stronger effect of the treatment on the outcome which was not possible with the OLS approach. Therefore, I use the IV estimation technique for this study.

My paper's contribution to the existing literature is three-fold. First, this study confirms earlier empirical estimates of the effect of unemployment on the amount of time spent on childcare with a larger dataset and using an IV estimate. The resultant hypothesis is testing if individuals who became unemployed

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[2]These regression estimates are not included in the paper. However, the first stage regressions are strong and statistically significant at conventional levels. I also use the Hausman specification tests. These results are discussed in more detail in the paper.

due to the declining business cycle increase the time they spent with their children. Aguiar *et al.* (2013) finds that after the 2008 recession, unemployment rose and the foregone work hours were re-distributed among other activities. They found a five percent increase in child care time. Similar behavior was observed by Edwards (2011). Both these papers used the ATUS, but were constrained by a smaller dataset. Results from my study show that parents increase the time they spend with their children during unemployment by 32 percentage points. This is relatively higher than the results found by other studies and consistent with the findings of Mork *et al.* (2014). Time spent on job search is 4 percentage points higher. Fathers increase their contribution to the household by spending more time on chores. Second, I find that in the short-run, parents try to compensate the loss in parental income by spending more time with their children to maintain similar level of care. Third, I find happier parents choose to spend more time with their children. Juster (1985) and Guryan *et al.* (2008) find that parents feel spending time with their children can be enjoyable and therefore, spend more time with them when stressed. Such a behavior may not be in the best-interest of the child. However, my estimates show that only black fathers respond to higher levels of stress by reducing parental time. Finally, and more importantly, I find that temporary economic slowdown comes with benefits. In the short run, parents can smoothen their consumption by using their savings and hence are not worried about new employment opportunities in the near future. My results corroborate this hypothesis. I find unemployment encourages parents to spend more time with their children than looking for new jobs.

2 Background

Becker (1988) calls children self-produced goods using market goods and ser-

vices, and parental time by each family. Some parents may choose not to have any children and spend none of these resources while some children may need more resources than others. The cost of a child, in terms of time and income, differs with children and parents. Each family or individual chooses the quantity of time and market goods to spend on their children. Higher parental income ensures that the child has access to good and nutritious food, quality education and better health facilities. Letablier *et al.* (2009) provides evidence that expenditure on children account for 20-30 percent of household budgets. Raising children is costly. Parental time is also essential for raising children. Becker (1988) argues that mothers' time is a major part of child care and this is the main reason why mothers invest more time with their children than at labor market.

Child care and development is a subject of concern for parents as well as policy makers. A loss of employment affects both - parental income and parental time. Involuntary or voluntary unemployment would result in a rise in disposable time but a fall in family income, both of which will have a significant effect on child development. A fall in household/parental income can lead to a loss of quality goods such as private schooling or health care, and socio-economic downgrade of the family, both of which influence child development. However, in the short-run the effect of fall in income is negligible as parents are more likely to smoothen their consumption using their savings. The gain in time resulting from unemployment which is more difficult to smooth, would be allocated to various activities including child care. As documented by Aguiar *et al.* (2013), after the 2008 recession, when unemployment rate rose, foregone work hours were re-distributed among other activities including child care. Parental time is expected to rise as a result of unemployment as seen by Edwards (2011). Mork *et al.* (2014) finds that chronic or long-term unemployment can lead to a deterioration of home environment due to household conflicts, and thus may lead to a fall in the time spent with children.

My study finds the opposite effect in case of short-term unemployment.

To summarize, a change in unemployment status can alter parental time. However, due to a lack of household data on time use information in the past, this relationship was difficult to explore. With the existence of the ATUS database, it is now possible to test whether unemployment influences parental time. and to what extent.

Loss of jobs (causing long-term unemployment) can have adverse effects on worker's health (Sullivan & Von Wachter (2009)), mental well being (Eliason & Storrie (2009)), marital stability (Eliason (2011)) as well as socio-economic status (Stevens (1997) and Jacobson *et al.* (1993)), all of which can affect their parental behavior and influence the child negatively. Many studies have highlighted the negative impact of long-term unemployment on child care. According to Ström (2002), parental unemployment is positively associated with higher risks of children accidents. Page *et al.* (2019) shows that an increase in local unemployment rate is associated with a significant increase in incidences of injuries and severe emotional difficulties among children. Chronic unemployment can lead to feelings of depression and humiliation creating a strain on parental behavior towards children. Such children are more likely to suffer from long periods of hospitalization, less likely to graduate high school and face unemployment (Christoffersen (2000)). Pedersen *et al.* (2005) shows that high prevalence of psychosomatic symptoms and chronic illness is common among children living in families with lower labor market participation. Parental unemployment has long term impact on children as seen in Oreopoulos *et al.* (2008). The authors find that adult earnings of children, with unemployed parents during their developing years, are 9 percent lower than otherwise.

Following the argument made by Becker (1988) that parental time and income

are the two inputs for producing children, I assume that parent's utility is affected by the care they provide to their children (Appendix A shows the derivation and the analyses in detail). To simplify the model, I use a Cobb Douglas utility function. However, I have replicated the results using different specifications such as constant elasticity of substitution function. Equation 1 depicts how parental care affects their utility. Parents' utility consists of the care they provide to their children $(C(X_c, L_c))$, in addition to their own leisure (L_p) and consumption of market goods and services (X_p).

$$U_p = U(C(X_c, L_c), X_p, L_p) \tag{1}$$

Production function of childcare is a function of parental time (L_c) and parental income (X_c). Let this function be Cobb Douglas in nature as given below where a and b are constants giving the share of time and income spent by parents on children, respectively.

$$C(X_c, L_c) = X_c L_c = abXL \tag{2}$$

Parents' maximize their utility (defined in equation 3), which incorporates the production of childcare given to their children subject to the budget constraint given by equation 4.

$$U_p = [C(X_c L_c)]^\alpha X_p^\beta L_p^{(1-\alpha-\beta)} = A X^{(\alpha+\beta)} L^{(1-\beta)} \tag{3}$$

$$24w - wL - X + I = 0 \tag{4}$$

Total available parental time is less than 24 hours as parents are expected to spend some amount of total available time on their own leisure and other activities like household chores. Total available parental time is effectively 24 hours minus time at work (t), leisure time (L_p) and time spent in any other activities. I assume that time spent at other activities is negligible. Parents earn non-wage income, I, in addition to wage income earned at a rate of w per hour. They substitute between parental time in caring for their children and the time they spent at work (to earn income to buy consumption goods for them and their children). To provide a certain level of childcare, parents choose an optimum X_c^* and L_c^*. This is obtained by maximizing parental utility (equation 3), which incorporates production of childcare, subject to the budget constraint (equation 4) faced by parents.

$$L^* = \frac{(24w + I)(1 - \beta)}{(1 + \alpha)w} \tag{5a}$$

$$X^* = \frac{(24w + I)(\alpha + \beta)}{(1 + \alpha)} \tag{5b}$$

Employed parents consume at the equilibrium point where the marginal rate of substitution between parental income and time coincide with the wage rate. These results are consistent with other functional forms of the utility function such as constant elasticity of substitution.

Besides the two determinants mentioned above, there are many other factors which affect child care development such as parental education (Guryan *et al.* (2008)) and household and neighborhood characteristics. Some of these determinants are influenced by state unemployment rate changes. These factors are included in the production function and hence detailed analyses is beyond the scope

9

of this study. For this paper, I will focus on the effect of state unemployment levels on changes in parental time with children.

3 Data

The data is taken from the American Time Use Survey (ATUS) and the Labor force participation data, both of which are administered by the Bureau of Labor Statistics (BLS). I use the unemployment rate which is an important indicator for measuring the current state of the business cycle and economic performance. It is a useful statistic because it serves to measure changes over time. Low unemployment rate suggests business cycle growth and higher levels depict an economic recession. Data on time diaries is obtained from the ATUS. It is a self-reported data which covers individual level information across state and over time. ATUS contains detailed information regarding the amount of time an individual spends engaging in various activities. I have divided a typical parental day into five groups: time with children; time at work; time for leisure; time doing household chores; and time spent searching for a job. The aggregate data covers 50 states over the time period of 2004 and 2015.

Table 1 gives the descriptive statistics of the labor force participation variables. Mean unemployment rate has been high at 6.25 percent, and the labor force participation has been slightly less than two thirds of the total working population (65 percent). Labor force participation is higher for men (71 percent) than that for women (59 percent), and the respective unemployment rate is also higher for men (6.58 percent) than that for women (5.89 percent). Similarly, we see a huge difference in the unemployment rate of the two races as well. Though the labor force participation rate between the two races differs slightly with white popula-

tion having a higher rate, the difference between their unemployment rate is much larger. The white population has an average unemployment rate of 5.45 percent and the black population faces an average unemployment of 12.17 percent. It is important to notice that the two demographics face very different labor market conditions.

There is a statistically significant difference between the mean of time spent by parents, as a ratio of total time, in various activities when employed versus unemployed (table 2). Employed parents spend 24 percent of their time with their children and 29 percent at their workplace. Unemployed parents spend 5 percentage points more time with their children and 1.3 percentage points more at leisure. Unemployed parents also spend more time working on household chores and looking for new employment. The characteristics of this sample of observation is given in table 3. There is a significant difference between unemployed and employed parents. Unemployed parents are slightly younger and less educated. They have lower spousal income than employed parents.

4 Empirical strategy

Parents change their daily schedules as a response to a change in their employment status. Changes in the business cycle affect employment status of workers by either gaining employment or getting laid-off. Employment status affects time diaries by impacting working hours. During a boom period, employment opportunities are lucrative and the opportunity cost of spending time with the children can be huge in terms of foregone wages. Thus, a business cycle change can influence the employment status, hence substituting time spent at work with other activities like child care and job search. This is tested using the Instrumental Variable (IV)

estimation method where I use the business cycle indicator as an instrument for employment status to find the effect on the time an individual tend to spend with their children. Business cycle changes are reflected by changes in the unemployment rate prevailing in the economy[3]. The second stage equation is represented as follows

$$Time\_A_{istj} = \alpha + \gamma Emp_{ist} + \rho Z_{ist} + \tau_j + \epsilon_{istj} \tag{6}$$

The first stage is given below

$$Emp_{ist} = \nu + \beta Unemp_{st} + \lambda Z_{ist} + \eta_s + \delta_t + \mu_{ist} \tag{7}$$

where Emp_{ist} gives the employment status of individual i at year t and state s; coded 1 if employment status is unemployed but looking for a job or laid-off; $Unemp_{st}$ gives the state of the business cycle in state s and over year t - namely the state unemployment rate; $Time\_A_{istj}$ is the time spent engaging in one of the five activities, A, as a percentage of total time available in a day (namely, time with children, time at work, time doing household chores, time for leisure and time spent searching for new employment opportunities), by individual i living in state s, over year t and on day j of the week; Z_{ist} gives individual characteristics such as age, family income level, educational achievement (the respondent's highest completed level of education), and spousal employment status, coded as 1 if spouse/partner is employed; η_s gives the state fixed effects; δ_t gives the time fixed effects; τ_j gives the days of the week; and ϵ_{istj} gives the error term in the second stage equation;

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[3]To study if the business cycle changes directly impact individual time allocations, I use an OLS estimation method to estimate the effect of state level unemployment rate on time diaries. I study how state level unemployment rate changes the time spent by parents on five different activities. The OLS estimates are very small in magnitude and statistically insignificant for most demographics. For this reason, I have excluded them from the paper.

μ_{ist} gives the error term in the first stage equation.

Various endogenous test such as the Hausman-specification test shows that we can reject the null, which says variables are exogenous, at conventional levels for specifications using time with children, time at leisure and time searching for job as outcome variables. This result is consistent across all different analyses, races and sexes that I conducted over the course of my study.

Further, to understand the extent to which a change in the business cycle effects various demographics, separate regressions were run for each by segregating individuals as per their race and sex.

5   Results

Figures 1 and 2 give the time trend of the national unemployment rate for various demographics. Both figures mirror a typical business cycle change graph with adjacent peaks and valleys. The unemployment rate for all demographics has been lowest in 2007 and then peaking in 2010. Comparing the two sexes, the unemployment rate has been fairly similar with the rate for men being slightly higher than that for women. However, figure 2 shows that the unemployment rates are starkly different for the two races. An unfavorable business cycle is more adverse for the black demographics who are already suffering from low employment opportunities. The national average is closer to the white population unemployment rate. Nevertheless, consistent with the previous figure, unemployment rate is lowest in 2007 before reaching its peak in 2010, just after the global financial crises, and then falling again. Due to the difference in the labor market for each demographic, I study the races and sexes individually.

Tables 4, 5 and 6 give the estimates for all the six demographics. I find that

parents spend the greater share of their newly acquired time with their children than looking for new job opportunities. Table 4 shows, for the whole sample, unemployed parents spend 12 percentage points less time at their work or any work-related activities such as socializing and engaging in income-generating hobbies, crafts and services. Parents lose their main or secondary job where they are subjected to report. Time spent on these work declines significantly in magnitude. However, time spent in other work related or income-generating activities like crafts and services increases. These estimates are statistically significant at 1 percent level. When parents loose their main employment (or source of income), they continue to spend the same or more time in work-related gatherings to explore future networks, or engage in their hobbies or services which may provide any additional income.

When unemployed, parents spend 32 percentage points more time with their children and 3.8 percentage points more time looking for new employment. The sign of the estimates are consistent across all demographics, and statistically significant at conventional levels. The magnitude of these estimates differ across various demographic groups. White mothers increase their time with their children by 31 percentage points and job search time by 2.8 percentage points as a response to being unemployed, while white fathers increase their time with their children by 28 percentage points but increase job search time by 5 percentage points (table 5). White fathers contribute 23.3 percentage points more time to household chores. This magnitude is large and statistically significant at 1 percent level. Such a behavior is not replicated by mothers when unemployed. White parents lower leisure time by 23 and 29 percentage points for mothers and fathers, respectively, but black parents do not.

Black parents, in general, face a higher level of state unemployment rate

14

than white parents (table 6). Similar to white parents, they also increase their time with their children when subjected to a business cycle downturn. Black unemployed fathers spend 13 percentage points more time with their children than their employed counterparts. The magnitude of response of black mothers differ much from their white counterparts. Black mothers spend only 15 percentage points more time with their children when subjected to unemployment. These parents spend more time looking for new employment when compared to similar white parents. Mothers and fathers spend 4 and 6 percentage points, respectively in this activity. However, they still prefer to spend a larger portion of their gained time with their children. Black fathers, similar to their white counterparts, increase their time engaged in household chores by 11 percentage points. Leisure is another important activity which occupies a significant time of the day. However, unlike white parents, black parents do not change their time allocation to leisure. For both races, unemployment status shifts parental priority from career to family and children.

Black mothers reduce time at work by 13 percentage points while white mothers do not reduce hours at work significantly at conventional levels (table 5). This is an interesting observation seen among the two demographics who also differ in their employment characteristics. Even though more white mothers are employed (93 percent) as compared to black mothers (86 percent) and they earn higher mean wages, time spent at work when employed is 4 percentage points lower for white mothers as compared to black mothers. White mothers spend less time at work when they are employed as compared to black mothers. This difference is statistically significant at 1 percent level of significance [4].

Appendix B gives the regression estimates for each demographic including the estimates of control variables.

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[4]The descriptive statistics given by race and sex are not shown in the paper.

5.1 Anticipated versus Unanticipated Unemployment

An individual can become unemployed for multiple reasons, and the reason for unemployment can impact their time diaries. To explore this, I compare workers who are unemployed for one of the following reasons: being laid-off, voluntarily resigned, new or re-entrants in the labor market and temporary or seasonal workers.

I used the state-level unemployment rate as an IV for the employment status of individuals. One would assume that the cause for unemployment plays a significant role in deciding time allocation by parents. Temporary or seasonal workers are expecting unemployment in the near future. They can plan their daily schedules accordingly. These workers will work more hours before their contract ends and spend greater hours at leisure and other activities after their contract ends. These parents may not be looking for new employment aggressively. On the other hand, laid-off workers face unexpected unemployment. They are unprepared for the change in their daily schedule, and hence their reaction to a job loss is predicted to be different from parents with expected unemployment. These parents are expected to actively look for new employment to compensate for the sudden loss in income. Other types of workers, such as new/re-entrants, have voluntarily entered the labor force and remain unemployed while they look for a job.

My study focuses on the short-run effect of unemployment, and it does not support the above hypothesis. Individuals facing unemployment in the short run are not worried about new jobs and tend to continue to focus on family welfare. Thus, corroborating the previous argument for no or negligible income effect. The cause for unemployment affects the time they chose to spend with their children slightly.

Table 7 shows that the interaction between employment status and the cause for unemployment is statistically significant at conventional levels. In this section, I do not provide the results for each demographics due to the problem of missing data for questions regarding the type of unemployment. Separating the regressions for each demographic reduces the observation size significantly giving unreliable regression estimates. Hence, I have used the whole sample and used a dummy variable depicting race and sex, respectively.

Workers, who are unemployed due to being new/re-entrants in the labor market, reduce parental time by 44 percentage points. Effectively, the gain in parental time for children with such type of unemployed parents is 8 percentage points (estimate from employment status + new/re-entrants + interaction between the two terms). Unemployed parents who are laid-off spend 38 percentage points (effectively 6.7 percentage points) less time with their children. Seasonally or temporary unemployed parents spend 38 percentage points (effectively 5 percentage points) less and voluntarily resigned parents spend 39 percentage points (effectively 4.2 percentage points) less time with their children. Leisure time increases for all types of unemployed parents by 45 percentage points. Individuals who are presumed to be more worried about their employment status (for example, laid-off and new/re-entrants) tend to spend more time with their children as compared to workers who have more control over their employment status (seasonal and voluntarily resigned workers).

Workers who are unemployed due to being new/re-entrants spend 1.5 percentage points less time searching for jobs (effectively 2.3 percentage points more time than other workers). Laid off workers spend 1.8 percentage points more time in job search (or effectively 5.4 percentage points more time than other workers). Seasonal workers and those who have voluntarily resigned do not deviate much

from the group average.

Time spent by parents engaging with their children differs slightly due to the cause of unemployment but time spent at job search does not differ for different types of workers.

5.2 Long-term versus short-term unemployment

Parents unemployed for a long term are expected to behave differently than parents who have been unemployed in the short term. The ATUS records individuals who have been unemployed for more than four weeks. The data also provides the current population survey collected 2-5 months before the ATUS interviews which asked the respondents' employment status in the last 4 weeks before the interview. Based on the two sources of information, the data provides those individuals who have been unemployed for at least a total of 3-6 months. I consider this medium-term unemployment instead of long-term unemployment because long-term unemployment, as measured in the existing literature, consists of years of unemployment. There is a small subset of the sample that responded to this question which explains the lower number of observations. I used state-level unemployment rates as an instrument for the employment status of individuals. A dummy variable is used to depict those individuals who have been unemployed for more than 3-6 months.

Very few demographics are affected by medium-term unemployment. White mothers spent 8 percentage points less parental time when unemployed for a few months. Time allocation to leisure is 8.1 percentage points more for this demographic in such conditions. Time allocated to engaging in job search is higher by 4 percentage points for white fathers. Black fathers are more likely to spend greater

time with their children (11 percentage points), this behavior is not reflected among black mothers, when unemployed for longer time. Black mothers are more likely to spend greater time for job search when faced with a medium-term unemployment. Being unemployed for a few months versus immediate unemployment causes very limited behavioral changes from each demographic. Some demographics, like white mothers are more likely to increase leisure time while others, like black mothers, increase job search time. This section further supports the negligible income effect argument in the short and medium run.

5.3   Mood indicators

Unemployment can cause emotional distraught leading to stress and decline in mental well-being (Eliason & Storrie (2009), Baum *et al.* (1986) and Turner (1995)). Parents, who face sudden unemployment, are concerned about the lack of adequate income, financial stability of their families and payment of their children's expenses. Such factors can affect parental behavior towards their children by either spending less time with them or being psychologically distressed.

This section discuses the effect of self-reported mood indicators, namely happiness, sadness and stress, on the amount of time parents spend with their children as a percentage of total time in a day. The mood indicators are reported on a discrete scale with 0 being the lowest. This data ia available for only three years in my sample - 2010, 2012 and 2013. I use the unemployment rate as an IV for parental employment status and incorporate interaction between employment status and the level of mood reported by parents in the regression analyses.

I find that a small subset of the 6 demographics studied here, is affected by these indicators. Happier parents tend to share their happiness by spending an

additional 4.8 percentage points time with their children. This result is consistent with white parents but not black parents. White parents spend an additional 4 percentage points more time with their children when they report 1 unit higher on the happiness scale. White fathers and mothers increase parental time by 5 percentage points, respectively.

It is interesting to find that black parents respond to parental time when they report a high value on the sadness scale. Fathers and mothers spend 1.9 and 2.2 percentage points less time, respectively, with their children when they report to be upset. I do not observe such behavior among white parents. Lastly, I also find that only stressed black fathers reduce parental time by 2.8 percentage points. All other demographics are non-responsive to higher levels of stress.

5.4 Elasticities

Time allocation to certain activities are more elastic than others when the employment conditions of parents change. More formally, I estimate the elasticity of time use category A when employed with respect to when unemployed using the following expression

$$e^A = \hat{\beta}^A \frac{\tau^A_{empt}}{\tau^A_{unempt}} \tag{8}$$

where τ^A_{empt} gives average time allocated to activity A when employed; τ^A_{unempt} gives average time allocated to activity A when unemployed; $\hat{\beta}^A$ denotes the estimated responsiveness of time use in activity A to changes in the employment status. Using the estimates of the employment status variable from tables 4, 5 and 6 for all six demographics, I find the elasticities for each demographic shown in table 8.

Elasticity of parental time is 0.27 for all individuals. It is slightly higher for white parents (0.29) and much lower for black parents (0.14). Parental time is inelastic in nature. Also, elasticity is higher for mothers than fathers when I analyze each race separately. For the entire population, elasticity is higher for fathers than mothers. Allocation of time to work is highly elastic for all demographics but much higher for men than women. Elasticity of job search is perfectly inelastic. Time allocation to household chores is inelastic also but statistically significant for only fathers. Leisure is also inelastic and statistically significant at 1 percent level for all demographics except black parents.

6 Conclusion

Patterns of daily time schedules show that there is a behavioral response of parents to the conditions of business cycle. Downturns in business cycle will force unemployed parents, theoretically, to spend more time searching for new job opportunities. My paper attempts to find evidence to test the hypothesis that business cycle changes causes parents, when unemployed, to spend a larger share of their time searching for new employment. Using the unemployment rate as an indicator for business cycle conditions, I look at the effect of its change on the total amount of time, as a percentage of total time in a day, individuals spend engaging in various activities such as leisure, household chores, job search and with their children. Parents can spend time with their children by helping them in household chores, assisting in school work, reading and listening, and child care.

My results show that parents, when unemployed due to a business cycle downturn, spend only 3 percentage points more time looking for new employment. The larger share (32 percentage points) of their excess time is spent with their children

engaging in child care and other child productive activities. My data allows me to focus on individuals who have been unemployed for a short period of time. In the short run, parents are more focused towards their children's welfare than looking for new employment. This result is consistent in sign but not magnitude across various demographics.

Though the regression estimates seems large in magnitude, the important implication is the direction or the sign of these estimates. When parents lose their employment, children welfare takes a higher priority than looking for new jobs. Unemployed fathers also spend more time engaging in household chores. White unemployed parents significantly reduce their leisure time. Such a change is not seen among black parents. Demographic characteristics also play an important role in determining parental time.

This study reflects an interesting aspect of parental behavior in terms of the time they spend in various activities. Unexpectedly, parents focus a lot more on children when unemployed instead of looking for new employment in the short run. The amount of time parents spend with their children is positively related to child care. However, my results cannot provide evidence to show how changes in parental time is associated with the long-term well-being of children. A broader implication of my study is that an economic slowdown, or specifically a loss in employment, comes with costs and some unexpected benefits. The gain in disposable time by losing employment seems to expand parental time, possibly because parents now have more energy, greater social interaction or less money to spend on professional child care. In the short run, they seem to focus on their children more than job search.

Employed parents are more likely to substitute parental time for work and compensate for their time with income spent on professional child care. When un-

employed, the opportunity cost of spending time with children falls. While income effect is negligible in the short-run, substitution effect is the driving force. I find evidence to suggest that loss of employment causes potential changes in household dynamics. Parents are likely to spend more time with children and fathers contribute more in household chores while continuing to look for new employment opportunities. Short-run unemployment might actually be beneficial for children even though long-run is not.

Short-run business cycle changes may be a blessing in disguise to strengthen the bond between parents and children. These results create a vital need to explore these relationships and provide suitable policy measures at the school level where parents can be educated, appropriately, regarding the importance of their time in the welfare and future development of their children, so that they do not wait for an economic slowdown or temporary unemployment to spend more time with their children.

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Figure 1: Time trend of national average unemployment rate.
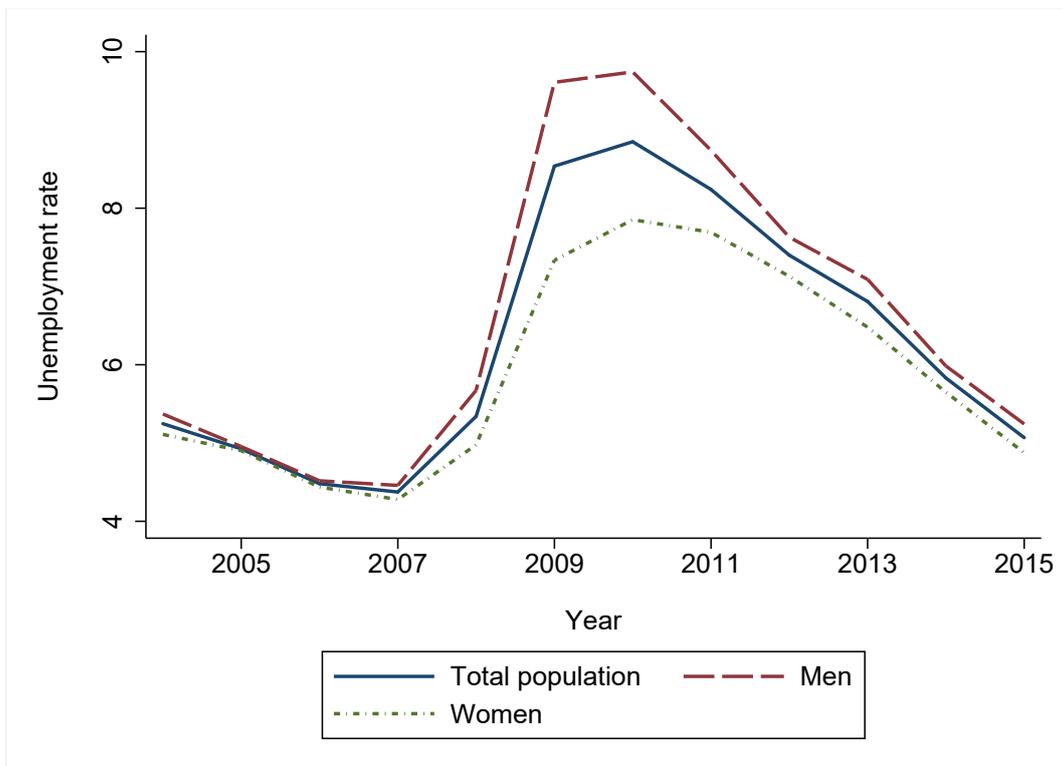
Source: Bureau of Labor Statistics.

Figure 2: Time trend of national average unemployment rate: White and black population
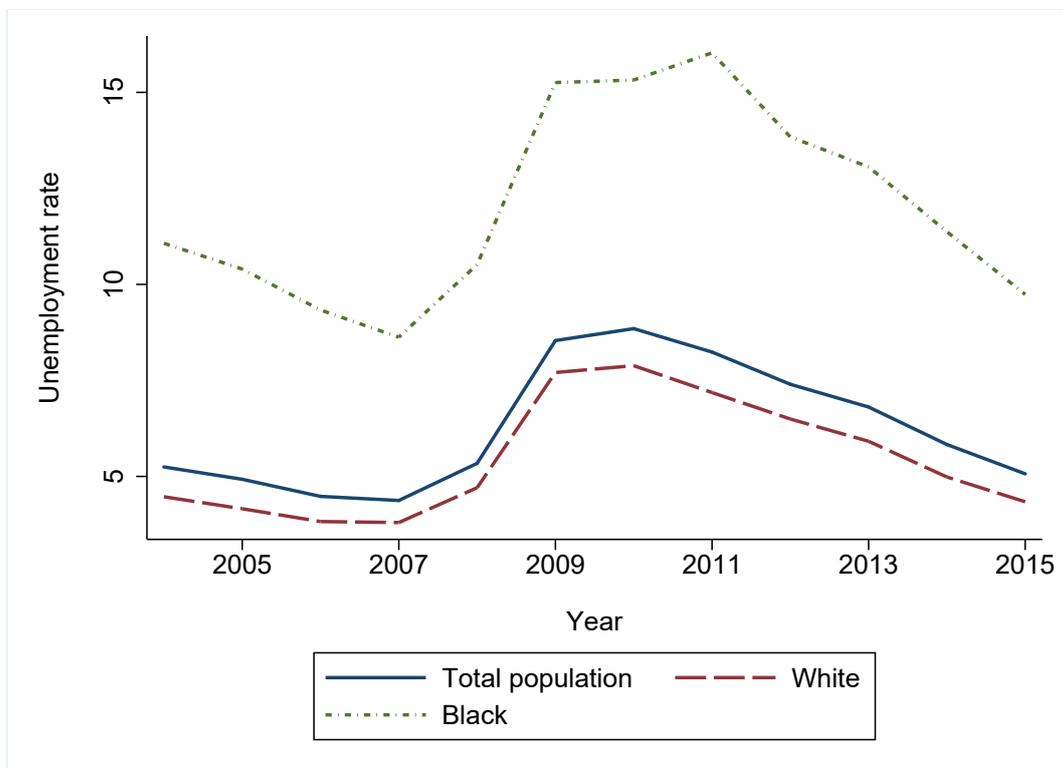
Source: Bureau of Labor Statistics.

Table 1: Description Statistics: Unemployment rate

Variable	Observations	Mean	Std. Dev
All individuals			
Unemployment rate	612	6.25	2.12
Labor force rate	612	65.65	4.19
Men			
Unemployment rate	612	6.58	2.41
Labor force rate	612	71.81	4.21
Women			
Unemployment rate	612	5.89	1.90
Labor force rate	612	59.86	4.44
All White individuals			
Unemployment rate	612	5.45	1.99
Labor force rate	612	66.10	4.71
White Men			
Unemployment rate	612	5.75	2.30
Labor force rate	612	72.63	4.75
White Women			
Unemployment rate	612	5.11	1.72
Labor force rate	612	59.82	5.35
All Black individuals			
Unemployment rate	507	12.17	3.98
Labor force rate	507	63.96	5.23
Black Men			
Unemployment rate	441	13.36	4.70
Labor force rate	441	66.56	5.99
Black Women			
Unemployment rate	428	11.40	3.81
Labor force rate	428	60.96	4.78

Source: Bureau of Labor Statistics. Unit of observation: state/year.

Table 2: Descriptive Statistics: Time allocated to various activities

	When employed Section 1			When unemployed Section 2			Mean Difference Section 3
Variable	N	Mean	Std. Dev.	N	Mean	Std. Dev.	
Children	408,314	0.247	0.431	29,428	0.296	0.457	-0.049***
Work	408,314	0.168	0.374	29,428	0.007	0.081	0.161***
Leisure	408,314	0.327	0.469	29,428	0.340	0.474	-0.013***
Chores	408,314	0.257	0.437	29,428	0.326	0.469	-0.069***
Job Search	408,314	0.001	0.026	29,428	0.031	0.173	-0.038***

Source: American Time Use Survey. Unit of observations: Ratio of time spent in activity given in column 1 divided by total time in a day in minutes.

Notes: Section 1 gives the mean and standard deviations of time spent on various activities of individuals who are employed. Section 2 gives the above information of individuals who are unemployed. The last column shows the difference between the mean time spent by employed and unemployed individuals engaging in activities given in column 1. $***p < 0.01$ for the difference in mean. The mean difference between the two are statistically significant.

Table 3: Descriptive Statistics: Control variables

	When employed Section 1			When unemployed Section 2			Mean Section 3
Variable	N	Mean	Std. Dev.	N	Mean	Std. Dev.	Difference
Age (in years)	408,314	40.215	9.149	29,428	37.291	10.425	2.924***
Below high school	408,314	0.059	0.235	29,428	0.167	0.373	-0.109***
High school	408,314	0.216	0.412	29,428	0.298	0.457	-0.082***
College	408,314	0.725	0.446	29,428	0.535	0.499	0.190***
Single	408,314	0.257	0.437	29,428	0.454	0.498	-0.197***
Spousal employment status	408,314	0.636	0.481	29,428	0.495	0.500	0.142***
Spousal income (weekly in log)	408,003	6.409	3.909	29,391	5.016	4.314	1.393***

Source: American Time Use Survey. Unit of observations: Years for age, percentage for education level, marital status and spousal employment, log of income for spousal income.

Notes: Section 1 gives the mean and standard deviations of the control variables of individuals who are employed. Section 2 gives the above information of individuals who are unemployed. The last column shows the difference between the mean value of the control variables, given in column 1, for employed and unemployed individuals. $***p < 0.01$ for the difference in mean. The mean difference between the two are statistically significant.

Table 4: Estimates from an IV estimation: All individual

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
All individuals					
Employment status					
1 if unemployed	0.318***	-0.127**	-0.286***	0.0567	0.0388***
	(0.0559)	(0.0544)	(0.0577)	(0.0437)	(0.00318)
Observations	437742	437742	437742	437742	437742
All men					
Employment status					
1 if unemployed	0.276***	-0.276***	-0.214***	0.163**	0.0518***
	(0.0763)	(0.0681)	(0.0734)	(0.0735)	(0.00706)
Observations	172037	172037	172037	172037	172037
All women					
Employment status					
1 if unemployed	0.252***	-0.0189	-0.268***	0.00706	0.0285***
	(0.0552)	(0.0498)	(0.0540)	(0.0418)	(0.00571)
Observations	265705	265705	265705	265705	265705

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for all individuals, only men and only women respectively in the three sections. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table 5: Estimates from an IV estimation: White

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
White individuals					
Employment status					
1 if unemployed	0.352***	-0.195***	-0.286***	0.0876*	0.0414***
	(0.0619)	(0.0706)	(0.0575)	(0.0468)	(0.00417)
Observations	367333	367333	367333	367333	367333
White men					
Employment status					
1 if unemployed	0.286***	-0.340***	-0.228***	0.231***	0.0511***
	(0.0769)	(0.0782)	(0.0755)	(0.0840)	(0.00813)
Observations	148465	148465	148465	148465	148465
White women					
Employment status					
1 if unemployed	0.308***	-0.0673	-0.288***	0.0190	0.0283***
	(0.0604)	(0.0615)	(0.0570)	(0.0449)	(0.00560)
Observations	218868	218868	218868	218868	218868

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of white population - all individuals, only men and only women respectively in the three sections. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table 6: Estimates from an IV estimation: Black

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Black individuals					
Employment status					
1 if unemployed	0.173***	-0.0978*	-0.129**	0.00531	0.0486***
	(0.0417)	(0.0499)	(0.0653)	(0.0556)	(0.0101)
Observations	41667	41667	41667	41667	41667
Black men					
Employment status					
1 if unemployed	0.129**	-0.241***	-0.0657	0.115**	0.0629***
	(0.0626)	(0.0783)	(0.0897)	(0.0528)	(0.0142)
Observations	11715	11715	11715	11715	11715
Black women					
Employment status					
1 if unemployed	0.154***	-0.132***	-0.0740	0.00965	0.0416***
	(0.0520)	(0.0509)	(0.0485)	(0.0555)	(0.00936)
Observations	29952	29952	29952	29952	29952

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of black population - all individuals, only men and only women respectively in the three sections. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table 7: Anticipated versus unanticipated unemployment: IV estimates

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.443***	-0.135	-0.452***	0.111*	0.0337***
	(0.110)	(0.105)	(0.0835)	(0.0643)	(0.00672)
New/re-entrants	0.0379**	-0.0151	-0.0313*	0.00315	0.00535***
	(0.0176)	(0.0128)	(0.0179)	(0.0138)	(0.00207)
New/re-entrants × Employment status	-0.401***	0.00668	0.454***	-0.0446	-0.0152*
	(0.112)	(0.0999)	(0.0883)	(0.0646)	(0.00805)
Laid-off	0.0100	0.00340	-0.0203**	0.00368	0.00325***
	(0.0121)	(0.0155)	(0.0103)	(0.0105)	(0.00101)
Laid-off × Employment status	-0.386***	-0.0452	0.456***	-0.0432	0.0182*
	(0.110)	(0.111)	(0.0816)	(0.0661)	(0.0105)
Temporary job ended	-0.0118	-0.0151	0.00231	0.0197	0.00485*
	(0.0256)	(0.0159)	(0.0198)	(0.0248)	(0.00264)
Temporary job ended × Employment status	-0.381***	-0.0213	0.452***	-0.0566	0.00658
	(0.105)	(0.111)	(0.0927)	(0.0762)	(0.00887)
Resigned	-0.00557	0.00986	-0.0249	0.0132	0.00746*
	(0.0229)	(0.0187)	(0.0210)	(0.0164)	(0.00433)
Resigned × Employment status	-0.396***	-0.0375	0.446***	-0.0115	-0.00158
	(0.117)	(0.112)	(0.0938)	(0.0706)	(0.0116)
Observations	437742	437742	437742	437742	437742

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.
Notes: The table gives the estimates for the whole population. I use marital status, age, race, spousal employment status, family income and education level as control variables. Equation 6 was modified to include dummy variables for various reasons of unemployment. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level.

Table 8: Elasticities

	Children	Work	Leisure	HH chores	Job Search
All individual	0.266***	-3.208***	-0.275***	0.045	0.001***
All men	0.230***	-6.972***	-0.206***	0.128**	0.001***
All women	0.210***	-0.477	-0.258***	0.006	0.001***
White individuals	0.294***	-4.926***	-0.275***	0.069*	0.001***
White men	0.234***	-8.892***	-0.219***	0.183***	0.001***
White women	0.257***	-1.700	-0.277***	0.015	0.001***
Black individuals	0.144***	-2.471*	-0.124*	0.004	0.001***
Black men	0.108**	-6.088***	-0.063	0.091**	0.001***
Black women	0.129***	-3.334***	-0.071	0.008	0.001***

$*p < 0.10, **p < 0.05, ***p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey.

Notes: The table gives the elasticities for different samples of the population as given in the rows. I estimate the elasticity of time use category A when employed with respect to when unemployed using the following expression $e^A = \hat{\beta}^A \dfrac{\tau^A_{empt}}{\tau^A_{unempt}}$. Here, τ^A_{empt} gives average time allocated to activity A when employed; τ^A_{unempt} gives average time allocated to activity A when unemployed; $\hat{\beta}^A$ denotes the estimated responsiveness of time use in activity A to changes in the employment status. I use the estimates of the employment status variable from tables 4, 5 and 6 for all six demographics.

Appendices

A Parental Resource Allocation: Theoretical Analyses

A.1 Simple 3 good model: Parental time with children, leisure time, market goods

Parents allocate their time between work and non-work activities. Individuals earn a wage rate of w for every hour spent at work. They earn a utility from consuming goods and services bought from the income earned, and the time they spend with their children and on their leisure. Parental utility function, U_p, consists of the time they spend with their children (C_t), time spent on their personal leisure (L_p)and total goods and services consumed by them (X).

$$U_p = U(C_t, X, L_p) \tag{A1}$$

where C_t is the time spent with children, X is the total amount of goods and services consumed by the parents, and L_p is the time spent on leisure by parents. Parents face the following budget constraint

$$wt = P_x X$$

Let P_x = price of consumption goods = 1 and t = total working hours, the budget constraint becomes

$$t = 24 - L_p - C_t$$

$$w(24 - L_p - C_t) = X$$

$$24w - wL_p - wC_t - X = 0 \qquad \text{(A2)}$$

where total time spent at work is the difference between total time available, which is 24 hours, and the time spent in other non-income earning activities (L_p and C_t), and assuming the price of consumption goods to be unity. I maximize parental utility U_p (equation A1) subject to their budget constraint (equation A2) using the Lagrange's multiplier. For simplicity, I assume the parental utility function, U_p to be Cobb-Douglas with unit elasticity.

$$U_p = U(C_t, X, L_p) = C_t^\alpha X^\beta L_p^{1-\alpha-\beta} \qquad \text{(A3)}$$

Using Lagrange's optimization, I obtain the following equilibrium values

$$L_p^* = 24(1 - \alpha - \beta) \qquad \text{(A4a)}$$

$$C_t^* = 24\alpha \qquad \text{(A4b)}$$

$$X^* = 24w\beta \qquad \text{(A4c)}$$

A.2 Integrating Production of Child Care in Parents' Utility

Becker (1988) discussed how time and income spent by parents are essential for production of children. Parents care about their children and their wellbeing. Their utility consists of the amount of goods and services they consume, the time they spent at leisure and their children's wellbeing (in terms of childcare they provide). In this section, I assume that parents' utility is affected by the amount of care they provide to their children in terms of income and time spent on them. I modify equation A1 to

$$U_p = U(C(X_c, L_c), X_p, L_p) \tag{A5}$$

where $C(X_c, L_c)$ gives the production function of childcare given by parents which is a function of the goods and services consumed by their children, X_c and the parental time spent with them, L_c. Also, parental consumption of goods and services is given by X_p and their leisure is depicted by L_p. For this model, I assume that parents spend a fixed share of their income on X_c and a fixed share of their non-working hours on their children, L_c. Therefore,

$$X_c + X_p = X \quad \& \quad L_c + L_p = L \tag{A6}$$

I assume $X_c = aX$ and $L_c = bL$ where $0 < a, b < 1$. This implies $X_p = (1 - a)X$ and $L_p = (1 - b)L$. Let the production function of childcare also be Cobb-Douglas in nature with the following expression

$$C(X_c, L_c) = X_c L_c = abXL \tag{A7}$$

Now, the new utility function of parents' is defined as below

$$U_p = U(C(X_c, L_c), X_p, L_p) = [C(X_c L_c)]^\alpha X_p^\beta L_p^{(1-\alpha-\beta)} = AX^{(\alpha+\beta)} L^{(1-\beta)} \quad \text{(A8)}$$

Maximizing the utility function of parents given by equation A8 subjected to a new modified budget constraint given as,

$$24w - wL - X = 0 \quad \text{(A9)}$$

The equilibrium values are as follows

$$L^* = \frac{24(1-\beta)}{(1+\alpha)} \quad \text{(A10a)}$$

$$X^* = 24w \frac{(\alpha+\beta)}{(1+\alpha)} \quad \text{(A10b)}$$

Optimum consumption of parents

$$L_p^* = (1-b)\frac{24(1-\beta)}{(1+\alpha)} \; ; \; X_P^* = 24w(1-a)\frac{(\alpha+\beta)}{(1+\alpha)}$$

Optimum consumption of children

$$L_c^* = b\frac{24(1-\beta)}{(1+\alpha)} \; ; \; X_c^* = 24wa\frac{(\alpha+\beta)}{(1+\alpha)}$$

A.3   Including Non-Wage Income

In the previous two sections, I analyzed a model for parental behavior which focused only on parental wage income. The primary and only source of income, for parents, was wage income, earning at a rate of w per hour. In this section, I explore the conditions under which parents earn both wage and non-wage income which is a lump sum amount given by I. Parental utility function remains the same as given in equation A8. The budget constraint is modified to include a non-wage income along with a wage income. Here, the non-wage income is independent of his/her employment status. Non-wage income can be obtained from savings, spousal income and gifts and bequests or family income for which an individual does not spend any hours working. The budget constraint changes to

$$24w - wL - X + I = 0 \tag{A11}$$

The new optimum values are

$$L^* = \frac{(24w + I)(1 - \beta)}{(1 + \alpha)w} \tag{A12a}$$

$$X^* = \frac{(24w + I)(\alpha + \beta)}{(1 + \alpha)} \tag{A12b}$$

Consumption of goods and services increases while the change in hours spent on leisure is ambiguous when wage rate, w, increases. When parents lose their jobs and become unemployed, the whole 24 hours of time is divided into own leisure and parental time.

B   Estimates from the IV regressions for various demographics

This section gives the regression estimates for each demographic including the estimates of control variables. The estimates show that single white parents spend less time with their children by 1.3 and 1.9 percentage points for mothers and fathers, respectively. Such a behavior is not seen among black parents. They do not change their parental time in the absence of a spouse or partner. Single white fathers allocate less time for work but more for household chores (table B5). Black single fathers do not change their time allocation for household chores significantly at conventional levels (table B8). White single mothers spend more time looking for employment (table B6) while black single mothers spend less time engaging in household chores and more time at leisure (table B9).

Higher educational achievement causes higher allocation to parental time with children. Here the omitted group is that with a college degree. There is a direct relationship between educational achievement and parental time. Parents with higher educational degree spend more time with their children. More education also allows parents to spend lesser number of hours at work as they earn a higher wage. Table B2 shows that all high school graduate fathers with no college degree spent 6 percentage points less time with their children while those with lower educational qualification spend 9 percentage points less time with their children when compared to college graduate fathers. Lower educated mothers are more likely to be engaged in household chores than those with more education. Mothers with less than a high school degree spend 9.6 percentage points less time with their children and 4.2 percentage points more engaging in household chores (table B3).

White (table B5) and black fathers (table B8) have similar parental behavior

when I compare their educational qualification but the magnitude of the estimates differ. With only a high school degree, black and white fathers spend 3 and 6.5 percentage points less time with their children, respectively. However, those with lower education level spend 3.5 and 11 percentage points less parental time as compared to college graduates for black and white fathers, respectively. Less educated white fathers also spend less time engaging in household chores - a behavior not mimicked by black fathers. More educated fathers also spend less time searching for new employment opportunities as compared to those with lower education. This behavior is seen among black fathers also. Similar trend is seen among white (table B6) and black (table B9) mothers, but with different magnitudes for the regression estimates. There is a 3.5 percentage points drop in parental time when educational qualification falls from college graduates to high school level and an additional 2 percentage points from high school level to below for black mothers. The corresponding estimates for white mothers are 6.5 and 11 percentage points, respectively.

Spousal employment status acts as an important factor in determining parental time allocation with their children. Individuals supported by employed spouses should have more time to spend with their children. Such behavior is seen among white parents but not among black parents. White parents spend more time with their children and engaging in household chores; and lesser hours at work when they have an employed spouse. They also lower job search time when supported by employed partners (table B4). Black mothers are not affected by their partners' employment status when allocating time in different activities except at work (table B9). Black fathers only lower working hours when they have an employed partner (table B8).

Family income plays a significant role in defining parental time. It specifies

the purchasing power and the standard of living of the household. In my analysis, annual family income is divided into four categories - those receiving annually less than $30000, between $30000 and $50000, between $50000 and $100000, and more than $100000. As families move to higher income brackets, they spend more time with their children. Families in the lowest income bracket spend 2.5 percentage points less time with their children (table B1). Individuals in the next higher income bracket spends 1 percentage points less time with their children. Individuals with family income between $50000 and $100000 spend 1.3 percentage points more time with their children, and individuals with family income above $100000 spends 5 percentage points more time with their children.

A similar trend is seen among white parents (table B4). At the lowest income bracket, white mothers spend 3.5 percentage points less time with their children and at the highest income bracket of family income, they spend 4.7 percentage points more time with their children (table B6). White fathers behave in a similar manner. The corresponding estimates for this demographic are -2 and 5 percentage points, respectively (table B5).

Black parents living in a rich household spend more time with their children as compared to black parents living in a poor household (table B7). Black fathers allocate 4.6 percentage points more time when they live in the lowest income bracket household. In the middle income range, they increase the time with their children by 4 percentage points. Fathers belonging to the highest income bracket (above $100000) spend 7 percentage points more time with their children (table B8). Surprisingly, black mothers are not affected significantly by their household income level (table B9). The coefficient estimates of all income groups are statistically insignificant at conventional levels except for the lower-middle income group. Black mothers living in a household with a family income of $30000-$50000 allocate

2.5 percentage points more time with their children than their counterparts.

Table B1: All individuals

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.318***	-0.127**	-0.286***	0.0567	0.0388***
	(0.0559)	(0.0544)	(0.0577)	(0.0437)	(0.00318)
Age	-0.00891***	0.00176***	0.00367***	0.00339***	0.0000882***
	(0.000153)	(0.000130)	(0.000136)	(0.000106)	(0.0000119)
Below HS	-0.106***	0.0427***	0.0662***	0.000496	-0.00335***
	(0.00575)	(0.00336)	(0.00509)	(0.00466)	(0.000704)
High School	-0.0671***	0.0175***	0.0512***	-0.000434	-0.00120***
	(0.00307)	(0.00237)	(0.00251)	(0.00182)	(0.000295)
single	-0.00147	-0.0293***	-0.0161***	0.0469***	-0.0000911
	(0.00396)	(0.00258)	(0.00318)	(0.00195)	(0.000393)
Family income <30K	-0.0256***	-0.0124*	0.0261***	0.0117*	0.000164
	(0.00676)	(0.00698)	(0.00677)	(0.00605)	(0.000639)
Family income 30-50k	-0.0105**	-0.00216	0.0118**	-0.0000548	0.000998**
	(0.00450)	(0.00383)	(0.00484)	(0.00394)	(0.000487)
Family income 50-100K	0.0136***	-0.00189	-0.00630	-0.00617	0.000727**
	(0.00406)	(0.00338)	(0.00441)	(0.00391)	(0.000347)
Family income >100k	0.0493***	0.000537	-0.0324***	-0.0177***	0.000311
	(0.00347)	(0.00292)	(0.00390)	(0.00401)	(0.000368)
Spousal emp status					
1 if employed	0.0122***	-0.0421***	-0.0301***	0.0611***	-0.00111***
	(0.00270)	(0.00160)	(0.00190)	(0.00158)	(0.000318)
Observations	437742	437742	437742	437742	437742

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey.

Dependent variable: Ratio of time spent in one of the five activities to total time available in a day. The columns show the estimated coefficients from equation 6. The table gives the estimates for the whole population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B2: All Men

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.276***	-0.276***	-0.214***	0.163**	0.0518***
	(0.0763)	(0.0681)	(0.0734)	(0.0735)	(0.00706)
Age	-0.00701***	0.00144***	0.00350***	0.00202***	0.0000557**
	(0.000179)	(0.000146)	(0.000206)	(0.000118)	(0.0000271)
Below HS	-0.0905***	0.0499***	0.0648***	-0.0220***	-0.00220*
	(0.00487)	(0.00456)	(0.00533)	(0.00396)	(0.00115)
High School	-0.0619***	0.0164***	0.0480***	-0.000505	-0.00200***
	(0.00430)	(0.00384)	(0.00347)	(0.00314)	(0.000526)
single	-0.0245***	-0.0208***	0.00353	0.0405***	0.00126
	(0.00450)	(0.00338)	(0.00425)	(0.00344)	(0.000909)
Family income <30K	-0.0153*	-0.00956	0.0278***	-0.00542	0.00242**
	(0.00908)	(0.00822)	(0.00781)	(0.00696)	(0.00123)
Family income 30-50k	-0.00609	-0.0127**	0.0136*	0.00443	0.000770
	(0.00654)	(0.00648)	(0.00750)	(0.00604)	(0.000890)
Family income 50-100K	0.0223***	-0.0219***	-0.0161**	0.0155***	0.000248
	(0.00708)	(0.00593)	(0.00737)	(0.00574)	(0.000622)
Family income >100k	0.0586***	-0.0235***	-0.0457***	0.0110*	-0.000407
	(0.00737)	(0.00615)	(0.00776)	(0.00577)	(0.000609)
Spousal emp status					
1 if employed	-0.00395*	-0.0193***	-0.00349	0.0273***	-0.000635
	(0.00238)	(0.00256)	(0.00246)	(0.00229)	(0.000418)
Observations	172037	172037	172037	172037	172037

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all men population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B3: All Women

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.252***	-0.0189	-0.268***	0.00706	0.0285***
	(0.0552)	(0.0498)	(0.0540)	(0.0418)	(0.00571)
Age	-0.00986***	0.00169***	0.00325***	0.00485***	0.0000664***
	(0.000218)	(0.000148)	(0.000170)	(0.000134)	(0.0000147)
Below HS	-0.0966***	0.0110*	0.0476***	0.0422***	-0.00410***
	(0.00750)	(0.00636)	(0.00704)	(0.00665)	(0.00108)
High School	-0.0603***	0.00780***	0.0422***	0.0112***	-0.000947***
	(0.00336)	(0.00295)	(0.00308)	(0.00210)	(0.000319)
single	-0.0155***	0.00934**	0.0168***	-0.0118***	0.00110***
	(0.00506)	(0.00394)	(0.00389)	(0.00385)	(0.000352)
Family income <30K	-0.0311***	-0.0126*	0.0299***	0.0137**	0.000138
	(0.00670)	(0.00712)	(0.00799)	(0.00623)	(0.000813)
Family income 30-50k	-0.00895	0.00101	0.00756	-0.000448	0.000831*
	(0.00581)	(0.00433)	(0.00533)	(0.00459)	(0.000462)
Family income 50-100K	0.0127**	0.00489	-0.00447	-0.0139***	0.000797***
	(0.00509)	(0.00389)	(0.00502)	(0.00421)	(0.000305)
Family income >100k	0.0485***	0.00719*	-0.0306***	-0.0258***	0.000648*
	(0.00442)	(0.00411)	(0.00465)	(0.00546)	(0.000371)
Spousal emp status					
1 if employed	0.00144	-0.0209***	-0.0139***	0.0339***	-0.000492
	(0.00379)	(0.00302)	(0.00388)	(0.00364)	(0.000331)
Observations	265705	265705	265705	265705	265705

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all women population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B4: All White individuals

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.352***	-0.195***	-0.286***	0.0876*	0.0414***
	(0.0619)	(0.0706)	(0.0575)	(0.0468)	(0.00417)
Age	-0.00913***	0.00164***	0.00377***	0.00364***	0.0000817***
	(0.000182)	(0.000125)	(0.000151)	(0.000123)	(0.0000141)
Below HS	-0.117***	0.0539***	0.0681***	-0.00200	-0.00333***
	(0.00629)	(0.00352)	(0.00517)	(0.00563)	(0.000835)
High School	-0.0711***	0.0200***	0.0513***	0.00125	-0.00145***
	(0.00312)	(0.00244)	(0.00259)	(0.00225)	(0.000294)
single	0.00178	-0.0286***	-0.0243***	0.0510***	0.000136
	(0.00444)	(0.00248)	(0.00396)	(0.00255)	(0.000436)
Family income <30K	-0.0291***	-0.00848	0.0283***	0.00920	0.0000658
	(0.00740)	(0.00876)	(0.00726)	(0.00704)	(0.000726)
Family income 30-50k	-0.0165***	-0.00206	0.0183***	-0.000310	0.000582
	(0.00477)	(0.00452)	(0.00512)	(0.00415)	(0.000474)
Family income 50-100K	0.0104**	-0.00349	0.0000143	-0.00775*	0.000799**
	(0.00420)	(0.00389)	(0.00486)	(0.00454)	(0.000366)
Family income >100k	0.0453***	-0.000783	-0.0241***	-0.0207***	0.000331
	(0.00390)	(0.00339)	(0.00408)	(0.00460)	(0.000409)
Spousal emp status					
1 if employed	0.0129***	-0.0427***	-0.0309***	0.0618***	-0.00112***
	(0.00294)	(0.00200)	(0.00223)	(0.00220)	(0.000345)
Observations	367333	367333	367333	367333	367333

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all white population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B5: All White Men

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.286***	-0.340***	-0.228***	0.231***	0.0511***
	(0.0769)	(0.0782)	(0.0755)	(0.0840)	(0.00813)
Age	-0.00726***	0.00159***	0.00352***	0.00207***	0.0000700**
	(0.000265)	(0.000135)	(0.000253)	(0.000125)	(0.0000282)
Below HS	-0.0973***	0.0579***	0.0689***	-0.0272***	-0.00238**
	(0.00473)	(0.00504)	(0.00560)	(0.00448)	(0.00120)
High School	-0.0647***	0.0199***	0.0498***	-0.00254	-0.00257***
	(0.00443)	(0.00398)	(0.00380)	(0.00351)	(0.000491)
single	-0.0196***	-0.0202***	-0.00420	0.0427***	0.00127
	(0.00533)	(0.00400)	(0.00482)	(0.00341)	(0.000890)
Family income <30K	-0.0208**	-0.00353	0.0295***	-0.00790	0.00274**
	(0.00895)	(0.00976)	(0.00867)	(0.00782)	(0.00138)
Family income 30-50k	-0.0113*	-0.00956	0.0182**	0.00200	0.000646
	(0.00654)	(0.00680)	(0.00744)	(0.00631)	(0.000842)
Family income 50-100K	0.0166**	-0.0202***	-0.0104	0.0137**	0.000175
	(0.00739)	(0.00632)	(0.00668)	(0.00603)	(0.000777)
Family income >100k	0.0510***	-0.0207***	-0.0381***	0.00841	-0.000636
	(0.00725)	(0.00647)	(0.00603)	(0.00562)	(0.000779)
Spousal emp status					
1 if employed	-0.00265	-0.0182***	-0.00402	0.0253***	-0.000454
	(0.00282)	(0.00261)	(0.00269)	(0.00243)	(0.000420)
Observations	148465	148465	148465	148465	148465

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all white men population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B6: All White Women

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.308***	-0.0673	-0.288***	0.0190	0.0283***
	(0.0604)	(0.0615)	(0.0570)	(0.0449)	(0.00560)
Age	-0.0101***	0.00137***	0.00341***	0.00525***	0.0000521***
	(0.000213)	(0.000143)	(0.000161)	(0.000141)	(0.0000138)
Below HS	-0.112***	0.0214***	0.0474***	0.0476***	-0.00398***
	(0.00933)	(0.00644)	(0.00799)	(0.00841)	(0.00105)
High School	-0.0652***	0.00899***	0.0412***	0.0159***	-0.000886***
	(0.00362)	(0.00272)	(0.00309)	(0.00214)	(0.000314)
single	-0.0135***	0.00869**	0.00802*	-0.00462	0.00145***
	(0.00520)	(0.00374)	(0.00458)	(0.00378)	(0.000420)
Family income <30K	-0.0358***	-0.0114	0.0363***	0.0110	-0.00000397
	(0.00745)	(0.00858)	(0.00786)	(0.00729)	(0.000867)
Family income 30-50k	-0.0162**	0.000298	0.0169***	-0.00146	0.000426
	(0.00654)	(0.00469)	(0.00566)	(0.00470)	(0.000502)
Family income 50-100K	0.0106**	0.00291	0.00267	-0.0171***	0.000963***
	(0.00482)	(0.00441)	(0.00566)	(0.00474)	(0.000366)
Family income >100k	0.0474***	0.00521	-0.0223***	-0.0311***	0.000720*
	(0.00506)	(0.00482)	(0.00501)	(0.00597)	(0.000403)
Spousal emp status					
1 if employed	-0.00154	-0.0220***	-0.0119***	0.0357***	-0.000390
	(0.00411)	(0.00276)	(0.00399)	(0.00370)	(0.000395)
Observations	218868	218868	218868	218868	218868

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all white women population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B7: All Black individuals

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.173***	-0.0978*	-0.129**	0.00531	0.0486***
	(0.0417)	(0.0499)	(0.0653)	(0.0556)	(0.0101)
Age	-0.00777***	0.00177***	0.00382***	0.00199***	0.000192***
	(0.000346)	(0.000291)	(0.000382)	(0.000321)	(0.0000629)
Below HS	-0.0580***	0.00401	0.0528***	0.00637	-0.00520**
	(0.00980)	(0.0103)	(0.0115)	(0.0122)	(0.00257)
High School	-0.0425***	0.00856	0.0411***	-0.00597	-0.00126
	(0.00556)	(0.00593)	(0.00661)	(0.00801)	(0.00104)
single	0.00742	-0.0148**	-0.00888	0.0180**	-0.00172
	(0.00933)	(0.00625)	(0.00837)	(0.00832)	(0.00185)
Family income <30K	0.0118	-0.00756	-0.0152	0.0109	0.0000253
	(0.00979)	(0.0103)	(0.0106)	(0.00956)	(0.00184)
Family income 30-50k	0.0203**	0.0122	-0.0213**	-0.0162	0.00503**
	(0.00941)	(0.0110)	(0.0105)	(0.0102)	(0.00214)
Family income 50-100K	0.0175*	0.0143	-0.0302**	-0.00289	0.00123
	(0.00938)	(0.0112)	(0.0123)	(0.0128)	(0.00140)
Family income >100k	0.0360***	0.0153	-0.0553***	0.00163	0.00238
	(0.0132)	(0.0115)	(0.0143)	(0.0134)	(0.00164)
Spousal emp status					
1 if employed	0.00101	-0.0144**	0.00361	0.0113	-0.00150
	(0.00650)	(0.00674)	(0.00680)	(0.00704)	(0.00220)
Observations	41667	41667	41667	41667	41667

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all black population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B8: All Black Men

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.129**	-0.241***	-0.0657	0.115**	0.0629***
	(0.0626)	(0.0783)	(0.0897)	(0.0528)	(0.0142)
Age	-0.00428***	-0.000621	0.00269***	0.00222***	-0.00000547
	(0.000490)	(0.000519)	(0.000511)	(0.000489)	(0.000147)
Below HS	-0.0349*	-0.0126	0.0506***	-0.00377	0.000706
	(0.0183)	(0.0152)	(0.0177)	(0.0155)	(0.00543)
High School	-0.0315***	-0.0107	0.0244**	0.0168*	0.00101
	(0.0118)	(0.0111)	(0.00988)	(0.00993)	(0.00308)
single	-0.0136	-0.0214	0.00940	0.0257**	-0.0000673
	(0.0108)	(0.0141)	(0.0162)	(0.0100)	(0.00343)
Family income <30K	0.0463***	-0.0297**	-0.0237	0.00760	-0.000531
	(0.0154)	(0.0133)	(0.0218)	(0.0159)	(0.00573)
Family income 30-50k	0.0406**	-0.0208	-0.0378*	0.0165	0.00150
	(0.0158)	(0.0134)	(0.0224)	(0.0155)	(0.00561)
Family income 50-100K	0.0380**	-0.0280**	-0.0391*	0.0291**	0.00000483
	(0.0163)	(0.0133)	(0.0234)	(0.0144)	(0.00427)
Family income >100k	0.0698***	-0.0290*	-0.0658**	0.0223	0.00279
	(0.0207)	(0.0173)	(0.0298)	(0.0195)	(0.00403)
Spousal emp status					
1 if employed	0.00645	-0.0158	-0.00267	0.0172*	-0.00520
	(0.0108)	(0.0144)	(0.0172)	(0.0105)	(0.00325)
Observations	11715	11715	11715	11715	11715

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all black men population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.

Table B9: All Black Women

	(1) Children	(2) Work	(3) Leisure	(4) HH chores	(5) Job search
Employment status					
1 if unemployed	0.154***	-0.132***	-0.0740	0.00965	0.0416***
	(0.0520)	(0.0509)	(0.0485)	(0.0555)	(0.00936)
Age	-0.00872***	0.00214***	0.00374***	0.00264***	0.000205***
	(0.000385)	(0.000325)	(0.000410)	(0.000444)	(0.0000685)
Below HS	-0.0550***	0.0127	0.0353***	0.0133	-0.00628**
	(0.0131)	(0.0115)	(0.0103)	(0.0154)	(0.00314)
High School	-0.0356***	0.0114**	0.0347***	-0.00788	-0.00261**
	(0.00641)	(0.00529)	(0.00779)	(0.00842)	(0.00127)
single	0.00349	0.00627	0.0157*	-0.0245**	-0.000978
	(0.0126)	(0.0117)	(0.00802)	(0.0105)	(0.00170)
Family income <30K	0.00163	0.00489	-0.0168	0.00925	0.00102
	(0.0135)	(0.0105)	(0.0120)	(0.0118)	(0.00170)
Family income 30-50k	0.0257**	0.0126	-0.0245**	-0.0192	0.00545***
	(0.0119)	(0.0134)	(0.0109)	(0.0133)	(0.00193)
Family income 50-100K	0.0181	0.0206*	-0.0296**	-0.0104	0.00132
	(0.0114)	(0.0123)	(0.0120)	(0.0159)	(0.00140)
Family income >100k	0.0223	0.0168	-0.0520***	0.0103	0.00249*
	(0.0139)	(0.0146)	(0.0119)	(0.0170)	(0.00147)
Spousal emp status					
1 if employed	0.0153*	-0.0140	-0.00730	0.00687	-0.000839
	(0.00840)	(0.0104)	(0.00709)	(0.00857)	(0.00201)
Observations	29952	29952	29952	29952	29952

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Bureau of Labor Statistics and American Time Use Survey. Dependent variable: Ratio of time spent in one of the five activities to total time available in a day.

Notes: The columns show the estimated coefficients from equation 6. The table gives the estimates for the sample of all black women population. The standard errors are given in parenthesis under the coefficient estimates. They are robust and clustered at state level. I use marital status, age, race, family income, education level and spousal employment status as control variables.