The Education Gradient in Maternal Enjoyment of Time in Childcare

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Abstract

Studies document large differences in the amount of time mothers spend in childcare by maternal education, even when controlling for characteristics such as income, employment hours, and work schedules. One possible explanation for this observed difference is that highly educated mothers find time in childcare to be more enjoyable. To inform this hypothesis, we examine education-based differences in mothers' average feelings during their time in childcare using pooled data from the 2010, 2012, and 2013 Well-being Modules of the American Time Use Survey. Among all mothers, spending time in childcare is associated with higher positive feelings than is spending time in other activities. However, highly educated mothers do not enjoy their time in childcare more than less-educated mothers. Findings are robust to controls for mother fixed effects.

1 Introduction

Evidence from time diary data shows that mothers with at least a college education spend roughly 4.5 hours more per week in childcare than mothers with a high school degree or less (Guryan et al. 2008). This means that over a year, the children of highly educated parents receive on average 234 more hours of parental attention than children of less-educated parents. If this were divided into six-hour school days, it would be equivalent to almost 40 more days of school for the children of highly educated parents. Not only do highly educated mothers spend more time in childcare, they spend more developmentally relevant time in childcare than do other mothers (i.e., by reading to and playing with younger children; Kalil et al. 2012). These gaps persist even when controlling for characteristics such as the number and ages of children in the household, and hours and timing of employment (Gauthier et al. 2004; Guryan et al. 2008; Hill and Stafford 1974). Such parental time investments have been shown to shape children's future economic and social success (Cunha et al. 2010; Del Boca et al. 2014; Hsin and Felfe 2014).[1]

Although various empirical investigations, using data from the U.S. and internationally, examine allocations of time in childcare relative to market work and other activities (Bloemen and Stancanelli, 2014; Cardoso et al., 2010; Connelly and Kimmel, 2007; Hallberg and Klevmarken, 2003; Kalenkoski et al., 2009), as well as in one case the quality of time spent with children (Kalenkoski and Foster, 2008), little is understood about the underlying subjective motivations or preferences that shape time spent with children in general or time in childcare as a primary activity. This leaves open questions about hypothesized mechanisms related to parents'

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[1] Note that "time in childcare" is not synonymous with "all time with children." The latter includes time in which mothers are available to children but are not actively engaged with them; a large share of time with children is of this type (Allard et al. 2007). Further, education-based gaps have been demonstrated for time in childcare (as the main activity) but not all time with children (see e.g., Table 3 in Kendig and Bianchi 2008). As such the present paper focuses on time in childcare.

enjoyment or investment, for example, as drivers of the amount of time spent with children. We take advantage of data on mothers' feelings during childcare time to test whether higher reported maternal enjoyment during childcare time among highly educated mothers may be one explanatory factor for the observed education-based differences in the amount of maternal time spent caring for children. Using data are from the 2010–2013 American Time Use Study Well-being Module (ATUS Well-being Module), we test whether differences in mothers' feelings during childcare time differ by maternal education. Further, we assess how robust differences in feelings during child care time are to controls for maternal fixed characteristics such as their general temperament and life enjoyment that should affect ratings of feelings across all activities.

Our study has multiple contributions. First, we examine the role of subjective feelings in childcare time as a proposed mechanism for observed differences in the quantity of childcare time by maternal education. As such, our study informs theories related to parental time allocation underexplored in existing empirical literature. Second, we examine this question controlling for other individual-invariant unobserved characteristics of mothers. We find, in a between-parent comparison, that less-educated mothers report more positive feelings in almost *all* activities. However, once we account for possible reporting differences, college-educated mothers report the same degree of positive and negative feelings during time in childcare, thus leading us to reject the enjoyment perspective and leave open the hypothesis that highly educated mothers are spending more time in childcare because of other reasons. In particular and as we discuss next, theory suggests that an investment motive is a likely explanation.

2 Parental Time in childcare: Direct utility versus investment

To set the theoretical framework, consider the following economic model of time allocation based on Becker (1965) and Cunha and Heckman (2007). A parent derives utility from

consumption, leisure, and time in childcare, and she cares about the quality or human capital of her child. The child's human capital is in turn a function of the parental investment in childcare and the child's initial human capital. Let $U(.)$ denote the parent's flow utility with standard concavity conditions. She maximizes her stream of utility. The recursive formulation of the parent's problem is

$$V(\theta_t) = \max_{x_t, l_t, c_t} U(c_t, l_t, q_t, \theta_t) + \beta V(\theta_{t+1}) \qquad \text{(Eq. 1)}$$

subject to a budget constraint, time constraint, and human capital production function:

$$c_t = w h_t \qquad \text{(Eq. 2)}$$

$$T = h_t + l_t + q_t \qquad \text{(Eq. 3)}$$

$$\theta_{t+1} = f(\theta_t, q_t) \qquad \text{(Eq. 4)},$$

where c_t is consumption, h_t is time working, l_t is leisure time, q_t is childcare time, θ_t is child's human capital, w is wage, T is total hours in a period, and β is discount factor. The parent's maximization problem can be expressed in terms of q_t and h_t by substituting the constraints into Eq. 1. The first order condition is thus

$$\frac{\partial U}{\partial q_t} + \beta \frac{\partial V}{\partial \theta_{t+1}} \frac{\partial f}{\partial q_t} = \frac{\partial U}{\partial c_t} w \qquad \text{(Eq. 5).}$$

The left-hand side of Eq. 5 is the marginal utility from childcare time, which has two components: the direct utility or enjoyment from spending time with child and the investment component or the return in the child's future human capital, which may be due to altruism or reciprocity. The right-hand side is the marginal utility of work due to higher consumption.

Highly-educated mothers have on average higher wage rates than less-educated mothers. In this model, an increase in the wage rate, holding everything else equal, increases time working and consumption. But because individuals value leisure and time in childcare in addition to consumption, an increase in the wage rate can decrease labor market work and increase leisure or

time in childcare because the higher wages allow them to consume more even if labor time is reduced. Consequently, it is unclear from theory whether highly-educated parents whose wage rate is high will spend more or less time in childcare activities on average than parents with less education and a lower wage rate. This depends on the utility parents get from childcare compared to the utility from work and leisure. In addition to wages, if either the direct or investment utility differs by parental education, then the time in childcare is likely to differ by education (see Halberg and Klevmarken (2003) for a discussion of time allocation that integrates time in childcare activities)

2.1 Enjoying Childcare: Variation by Parental Education

Enjoyment that parents receive from time in childcare may vary by parental education for various reasons. First, highly educated parents may feel more comfortable and confident in their time in childcare. For example, a parent who struggles with reading may find it unpleasant to read to her child. Second, highly educated parents may have material advantages that make time in childcare more enjoyable. These advantages can include things like a greater variety of books and games that make play more fun, and financial resources to attend events and substitute purchased items for home production, therefore freeing time to spend in childcare.

Third, highly educated parents engage in different childcare activities, which results in differences in how much they enjoy the activities. Research suggests that highly educated parents allocate a greater share of their childcare time to activities that are more structured and developmentally relevant (Hsin and Felfe 2014; Kalil et al. 2012). Gimenez-Nadal and Sevilla (2016) show that childcare related to supervising and teaching children are more enjoyable for parents than childcare related to children's basic needs. Similarly, Meier et al. (2016) show that childcare time spent playing and socializing produces greater parental well-being than time spent

in other activities. If highly educated parents are more (or less) likely to engage in activities related to supervising, teaching, playing, and socializing rather than meeting children's basic needs, they may enjoy childcare more (or less) than less-educated parents.

Fourth, highly educated mothers are more likely to be married (Blau and Winkler, 2018) and thus to spend childcare time jointly with their spouse. This contrasts to the greater amount of solo childcare time spent by unmarried mothers (Kalil et al. 2014). Shared childcare time spent with one's spouse and children might be easier and hence more enjoyable than the same activity undertaken alone (Kalil et al. 2014). Meier et al. (2016) show that time in childcare is rated as less enjoyable among single mothers than among their married counterparts. However, time in childcare is rated as less enjoyable among married mothers whose husbands work long hours. Because college-educated mothers are more likely to have husbands who work long hours, this could offset the marriage benefit to enjoyment of time in childcare. At the same time, childcare time is rated as less enjoyable among married mothers whose husbands are unemployed. College-educated mothers are less likely to have unemployed husbands, which could increase their enjoyment from time in childcare. Meier et al. (2016) shows that mothers' own employment status showed little association with feelings in childcare.

Fifth, highly educated parents may differ from less-educated parents in important ways that influence their time in childcare. Less educated parents may have greater time constraints than highly educated parents if they work more hours, less flexible hours, or have longer commutes. Although Bianchi (2000) and Bianchi, Robinson, and Milkie (2006) note that working mothers appear to maximize time in childcare as a primary activity by allocating less time to such activities as housework, personal care, and free-time activities, juggling or multitasking day-to-day financial demands and meeting other consumption needs of the family

(e.g., food and housing) also reduces the attention and energy available to attend to childcare (Bianchi et al., 2006; Gennetian et al. 2016).

Finally, selection factors could play a role. Because college-educated women have fewer unintended pregnancies compared to women without a college degree (Finer and Zolna 2016), the former may be more likely to select themselves into motherhood. Those who enjoy children more might choose to become mothers; less-educated mothers may more often become pregnant unintentionally, and this may correlate with differences in their enjoyment of childcare.

2.2 Previous Research on Utility of Time in Childcare

Previous studies provide support for and against the enjoyment hypothesis. On the one hand, Wang (2013) use the ATUS Well-being data to show that time in childcare was rated as the most meaningful and the least stressful activity among parents compared to time in activities not including children. On the other hand, Connelly and Kimmel (2015) find that women do not enjoy time in childcare more than men even though evidence clearly shows that women spend much more time than men in childcare. Gimenez-Nadal and Sevilla (2016) use data from the 2012 and 2013 waves of the ATUS Well-being data to examine education-based differences in the enjoyment of time in childcare. They show that more highly educated mothers actually feel worse than less-educated mothers in their time in childcare. However, that study does not account for the possibility that parents' reports of well-being differ by education across *all* activities, such that less-educated parents report that everything is more (less) enjoyable. Consequently, the differences that they find in parent feelings during time in childcare may be due to differences in reporting or differences in temperament by education. We specifically address these issues with our methodological approach.

3 Data

The ATUS is a time diary study of a nationally representative sample of Americans (Hofferth et al. 2013). ATUS respondents report on their activities over a 24-hour period, from 4:00 a.m. of the day before the interview until 4:00 a.m. on the following day, indicating the type of activity as well as where, when, and with whom it occurred. Over 400 activity categories are represented by the classification. Data are collected on every day of the week, including holidays, with weekends oversampled. 50% of diaries are about weekend days and 50% are about weekdays. ATUS sample members are drawn from Current Population Survey (CPS) respondents. One individual aged 15 or older per CPS participating household is invited to participate in the ATUS during the two to five months following their exit from the CPS. The 2010, 2012, and 2013 ATUS had an average response rate of 53% (ATUS 2016). The sample is nationally representative with proper application of weights.

Our analysis has several important features. First, as noted previously, we count time in childcare only when it is reported as the mother's primary activity, which is a subset of all time with children (see Footnote 1). Second, we focus only on mothers' (and not fathers') time in childcare. A full analysis of mothers and fathers is beyond the scope of this study. Moreover, because the ATUS is a draw of representative households and not individuals, the sample of mothers is more generalizable than the sample of fathers, given differences in custody and single parenthood by race/ethnicity and income. A primary activity refers to an individual's main activity. Time spent simultaneously on other activities is not counted as a primary activity. Thus if a mother reports that she was watching television and her child was there, her primary activity was watching television. If she reports that she was watching TV and feeding her child but states the latter was the main activity, then feeding her child is recorded as her primary activity. We follow Wang (2013) in categorizing activities into seven major categories: time in childcare, paid

work, housework, watching television, leisure, sleeping, and other. Childcare includes activities such as physical care for children, looking after children, playing with children, reading with children, activities related to children's education, attending children's events, waiting with children, picking up and dropping off children, activities related to children's health, planning for children, etc.

In 2010, 2012, and 2013 the ATUS added a well-being module that asked respondents who completed the time diary to also report on how they felt during an activity. After respondents completed the 24-hour time diary, three activities that lasted at least five minutes—excluding sleep and personal grooming—were randomly selected and for each of these activities respondents were asked how they felt during the time they were engaged in the activity. Respondents reported on a scale from zero to six (with six indicating a higher value) how happy, tired, stressed, sad, or in pain they felt during the activity and how meaningful they considered the activity.[2] We apply weights provided by the Bureau of Labor Statistics for this sample in order to compute average levels of feelings that individuals report during specific activities (i.e., the weights adjust for the time that respondents spent in sampled activities).[3]

3.1 Sample

Our sample consists of women aged 25–60 years old living with at least one own child who is younger than 18 years old at the time of time use survey. We focus on this age range

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[2] The specific language used for each item is available in ATUS (2014b).
[3] Specifically, activity weights were constructed as follows:
$ActivityWeight_{ij} = RespondentWeight_i \times EligibleActivities_i \times TimeActivity_{ij}$ where $ActivityWeight_{ij}$ is sampling weight assigned to activity j done by respondent i; $RespondentWeight_i$ is respondent-level weight for individual i, which is the ATUS weights adjusted to account for nonresponses in the Well-being Module; $EligibleActivities_i$ is total number of activities in respondent i's diary that are eligible for the Well-being Module, hence it is proportional to the inverse probability of sampling an activity; and $TimeActivity_{ij}$ is the total time spent in activity j. These activity weights are used to estimate average feelings of population in a specific activity (ATUS 2014a).

because few women younger than 25 have completed their education,[4] and few mothers older than 60 have a child in their household for whom they are the main caregivers, and those who do may differ in important ways from younger mothers. Columns 1 and 2 in Table 1 show sample sizes of the ATUS and Well-being Module: 7,355 respondents in the ATUS sample are mothers, and 6,869 (93.4%) have data in the Well-being Module (see row 4 of Table 1). 74.8% of mothers in the ATUS, and a similar proportion of the mothers in the Well-being Module, reported spending any time in childcare activities during the 24-hour time diary period (see row 7 of Table 1). With the appropriate application of weights for nonresponse in the Well-being Module, our analytic sample is nationally representative of mothers aged 25–60 residing in the United States and with at least one own child at the time of the survey.

We divide mothers into two education groups: those with less than a four-year college degree and those with a bachelor's degree or higher. We do this following prior studies showing that the education-based gap in childcare time arises from differences between college-educated mothers and all other mothers (Guryan et al. 2008; Kalil et al. 2012). Columns 3 and 4 from Table 1 show that 3,979 mothers (57.9% of 5,139) have less than a four-year college degree and 2,890 (42.1% of 5,139) have a college degree or higher (see row 4 of Table 1).

Columns 3 and 4 also show that college-educated mothers are more likely than mothers with less schooling to report spending any time in childcare and thus are also more likely to be randomly selected to report their feelings during childcare time. Specifically, 80.7% of mothers with a college degree reported spending any time in childcare and 57.6% of them reported

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[4] No mother younger than 22 years old has a college degree in the Well-being Module sample; about 2% of 22- and 23-year-old mothers have a college degree; and this percentage is close to 10% for 24-year-old women. At the same time, in the United States in 2013, the percentage of women aged 18–24 years old with a college degree is 11%, lower than the 31% of women 25 years and older (U.S. Census Bureau 2016).

feelings associated with childcare time (see rows 7 and 9 of Table 1). These percentages for mothers with no college degree are 70.5 and 53.3, respectively. With proper randomization, mothers who were asked to report their feelings during childcare should be representative of those who reported spending time in childcare but who were not selected to report their feelings during childcare. Mothers who did not report spending time in childcare during the 24-hour time diary were not eligible to report their feelings during these activities. Although we have no information on how these mothers would have felt had they engaged in childcare activities, we conduct sensitivity analyses based on behavioral assumptions about these mothers.

Guryan et al. (2008), Kalil et al. (2012), and Ramey and Ramey (2010) show that college-educated mothers spend significantly more time in childcare than less-educated mothers, whether one considers total time in childcare or childcare time in specific activities like basic care, teaching, playing, etc. In Fig. 1 we replicate these findings with our data for the $N = 6,869$ mothers in our analytic sample. Panel A shows all mothers in this sample and Panel B shows all mothers in this sample who reported spending any time in the activity (i.e., mothers who did not do a particular activity are excluded from the results in Panel B). Mothers with a college degree spend 2.18 hours per day in childcare whereas mothers with less than a college degree spend 1.67 hours, or 23.7% less time in childcare than mothers with a college degree.[5] Thus, college-educated mothers spend approximately 31 minutes more per day in childcare than less-educated mothers.[6] College-educated mothers also spend more time in paid work and less time in

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[5] Numbers are very similar when using the entire sample of mothers in the ATUS for the years the Well-being Module was fielded. For instance, mothers with college degrees spend 2.2 hours in childcare whereas mothers without college degrees spend 1.68 hours. This gap is also similar when using all available years of ATUS from 2003 to 2015. Mothers with college degrees spend 2.26 hours and mothers with less than a college degree spend 1.73 hours in childcare.
[6] The pattern is similar to Guryan et al. (2008), even though the magnitudes differ somewhat because they use different time periods and different analytic sample inclusion criteria.

housework, watching television, and sleeping. These differences do not substantively change when we look only at mothers who reported at least some time in each activity with the exception of time spent in paid work. Conditional on working, mothers with a college degree are more likely to work full time, whereas mothers with less than a college degree work more hours (potentially across multiple jobs). In summary, our analytic sample replicates the results of other researchers who use the full ATUS sample and other large-scale time diaries.

3.2 Measures

There is no agreed upon way to summarize the complex feelings that individuals have while engaging in an activity. Individuals can feel both tired and happy at the same time, for example, and social scientists have no consensus on how to give relative weight to these two feelings. We therefore create three different measures of mothers' feelings during their time spent with children: a standardized measure of positive feelings (positive affect), a standardized measure of negative feelings (negative affect), and net affect. We distinguish positive from negative feelings in all analyses because researchers have long argued that these are qualitatively distinct phenomena and not opposite ends of a unidimensional spectrum (Kushlev et al. 2015; Taylor 1991).

To construct the feelings measures, we divide the feelings reported by mothers into positive feelings and negative feelings. We average parents' reports of happiness and meaningfulness to create a positive feelings index that varies from zero (when a parent reports feeling not at all happy *and* reports feeling that the activity is not at all meaningful) to six (when a parent reports feeling very happy *and* reports feeling that the activity is very meaningful). Similarly, we create a negative feeling index that averages parents' reports of feeling sad, tired, and stressed, which can also vary from zero to six. If the report of any feeling is missing, the

item value is set to zero in the construction of the index.[7] We exclude pain from all measures to avoid confounding what might be the report of a physical sensation with psychological feelings.

One potential problem with the subjective well-being data is that individuals might interpret and use the response categories differently. If respondent A says that she is very happy in an activity and respondent B says she is moderately happy, we cannot tell if A is really happier than B during the activity. When B rates the intensity of a particular emotion as a four, maybe that is the equivalent of a six for A. If differences in interpretation or reporting vary by education, our results could simply reflect these differences and not the underlying differences in true utility.[8] To address this concern, we create a measure of positive feelings standardized to the reported feelings of less-educated mothers:

$$Y_{ij}^{pos} = \frac{y_{ij}^{pos} - \mu_c^{pos}}{\sigma_c^{pos}} \qquad\qquad \text{(Eq. 6)},$$

where y_{ij}^{pos} is the average positive feeling constructed from reported happiness and meaningfulness by individual i for activity j, μ_c^{pos} and σ_c^{pos} are mean and standard deviation of the average positive feelings across all activities for the less-than-college education group, and Y_{ij}^{pos} is the standardized positive feeling measure.

We also compute a comparable standardized measure of negative feelings as follows:

$$Y_{ij}^{neg} = \frac{y_{ij}^{neg} - \mu_c^{neg}}{\sigma_c^{neg}} \qquad\qquad \text{(Eq. 7)},$$

where y_{ij}^{neg} is the average negative feeling constructed from reported sadness, stress, and tiredness, and μ_c^{neg} and σ_c^{neg} are the mean and standard deviation for less-than-college education

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[7] 0.19% of values was missing and set to 0.
[8] In our dataset, less educated mothers report more extreme values 0 and 6 for both positive and negative feelings. We deal with this by constructing various measures of well-being and by using a fixed-effect model that compares feelings within person. Descriptions of these approaches are explained throughout the paper.

group. These standardized measures represent the difference in reported feelings between highly educated and less-educated mothers as a percent of the standard deviation of less-educated mothers.

Finally, we compute a net positive feelings measure representing the difference between the average positive and negative feelings. This difference is then standardized by the mean and standard deviation of the net positive feelings measure for the mothers with less than a college education, as shown in the following:

$$Y_{ij}^{netaff} = \frac{(y_{ij}^{pos} - y_{ij}^{neg}) - (\mu_c^{pos} - \mu_c^{neg})}{\sigma_c^{pos-neg}} \qquad \text{(Eq. 8)},$$

where y_{ij}^{pos}, y_{ij}^{neg}, μ_c^{pos}, and μ_c^{neg} are as described above, and $\sigma_c^{pos-neg}$ is the standard deviation of the difference between y_{ij}^{pos} and y_{ij}^{neg} for the less-than-college education group. This measure subtracts negative feelings from positive feelings and then standardizes the difference. Hence, the net feelings measure provides an indication of whether a given activity is on balance experienced positively or negatively by mothers.

We also constructed several alternative indicators: (i) the "Very Positive" indicator takes a value of one if a mother felt very happy and considered childcare very meaningful (reported a six on happy and on meaningful); (ii) the "Very Negative" indicator equals one if the mother felt very stressed, very sad, and very tired; and (iii) the U-index (Kahneman and Krueger 2006; Krueger 2007) gives more weight to negative feelings and classifies an activity as "unpleasant" if the maximum rating on any of the negative feelings (stressed, tired, and sad) is strictly greater than the maximum rating on any of the positive feelings (happy and meaningful). Results of these measures are presented as robustness checks.

4 Descriptive statistics

Table 2 presents characteristics of mothers by education group across the two relevant samples. When we compare time spent in childcare with time spent in other activities we use the sample of all mothers who are eligible for the Well-being Module ($N = 6,869$). We also use this sample to compare feelings across activities. When we compare feelings for highly educated and less-educated mothers during childcare, we restrict the sample to mothers who engaged in these activities and who were selected to report their feelings during childcare ($N = 2,839$).

Among all mothers, those with a college education are older and are more likely to be white compared to mothers with less education. They are also more likely to be employed and to be employed full-time, and less likely to be Black or Hispanic and to have fewer children, but the proportion with only one child does not differ statistically significantly from mothers with less education. The youngest child is younger for college-educated mothers compared to non-college-educated mothers (see columns 2 and 3 of Table 2). Similarly, within the subsample of mothers with data on feelings during childcare, mothers with a college degree are older, more likely to be white, less likely to be Hispanic, more likely to be employed, more likely to have fewer children and to have a younger youngest child than mothers without a college degree. The proportion of mothers with only one child is similar for mothers from both education groups (see columns 5 and 6). Comparing columns 1 and 4 of Table 2, we also see that mothers who reported feelings during childcare are younger, less likely to be employed, and more likely to have a child younger than six years old.

Table 3 describes the raw (unstandardized) measures of reported feelings during each major activity by education group using the $N = 6,869$ mothers in the Well-being Module. In addition, we perform between- and within-group comparisons to test for any significant differences. Because mothers reported feelings during three randomly selected activities, the

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total number of observations at the activity level is larger than the total number of mothers. However, because some activities such as childcare were more frequent and thus more likely to be selected than others activities, the number of observations at the activity level will be higher for childcare than the number of mothers.

Three patterns emerge. First, mothers with no college degree reported higher overall levels of happiness and meaningfulness, but were also more likely to report feeling sad and tired than their college-educated peers, as indicated in column 1 of Table 3. Second, as column 2 on the sample of mothers who reported feelings during time in childcare shows, mothers with no college degree reported higher scores for happiness (4.89 versus 4.70) and meaningfulness (5.40 versus 5.12) during childcare relative to mothers with a college degree. These differences are statistically significant and substantively meaningful. For example, as a share of the standard deviation of the non-college educated, the differences suggest that college-educated mothers report 0.13 and 0.22 standard deviations lower in their scores on these positive feelings. The scores for sadness, stress, and tiredness in childcare time are not statistically different across education groups at the 5% significance level.

Third, within each education group, childcare time yields the highest scores for happiness and meaningfulness and the lowest score for sadness of all the activities, although watching TV and leisure activities generate as much happiness as childcare time. This corresponds to previous research showing that mothers have more positive feelings during childcare activities than during other activities, and to previous research showing that less-educated mothers are more likely to have positive feelings during childcare activities than more highly educated mothers. However, these results also suggest that less-educated mothers are more likely to report positive feelings

for almost all activities. It is hard to say whether the differences reflect differences in reporting or true differences in affect.

To construct the feelings indices, we divide the feelings reported by mothers into positive feelings, which includes happiness and meaningfulness, and negative feelings, which includes sad, tired, and stressed. The components of these indices are correlated in the expected directions, and these correlations are statistically significantly different from zero (results not shown here but available upon request). Happiness and meaningfulness are positively correlated with one another but negatively correlated with the components of the negative feelings index. In contrast, the components of the negative feelings index are positively correlated with one another but negatively correlated with the components of the positive feelings index.

Descriptive statistics of the constructed well-being indices are shown in Table 4. Mothers with no college education have higher average positive and negative feelings and net affect overall and in childcare activities. Within education groups and comparing childcare with other activities, childcare has the highest average positive feelings and net affect, and its score of negative feelings lies in between the other activities.

5 Empirical Method

We test the enjoyment hypothesis with the following empirical model:

$$Y_{i,childcare}^{feel} = \alpha + \delta College_i + X_i\beta + \varepsilon_{i,childcare} \quad \text{(Model 1)},$$

where $Y_{i,childcare}^{feel}$ measures the constructed well-being indices ($Y_{i,childcare}^{pos}$, $Y_{i,childcare}^{neg}$, and $Y_{i,childcare}^{netaff}$) of mother i when engaging in childcare activities, $College_i$ is a dummy variable equal to one if mother has at least a college degree. In order to account for selective factors independent of education that might also affect positive and negative feelings, X_i is a set of exogenous covariates of mothers, which includes race and ethnicity. This set of covariates also

incorporates time indicators to account for secular trends in feelings, including dummy variables for the days of the week on which the activity occurred, month indicators, and dummy variables indicating the year in which the survey was fielded.[9] The coefficient δ is the estimated difference in feelings between highly educated and other mothers.

6 Results

Table 5 presents estimates from Model 1 excluding and including covariates for each of the three measures of feelings. The model is estimated using OLS, and the standard errors are clustered at the individual level to account for multiple reports per respondent using the sample of mothers who spent time in childcare and were randomly selected to report their feelings during time in childcare ($N = 2,839$). As shown in column 1 (model with no covariates), college-educated mothers are less likely to report positive feelings during childcare activities. The difference in positive feelings between highly educated mothers and less-educated mothers is large, at over a quarter of the standard deviation of the score for less-educated mothers. Columns 3 and 5 show estimates using negative feelings and the net affect measures. Here we see that mothers with a college degree are no more or less likely to report negative feelings than other mothers.

In estimations with covariates, college-educated mothers still report less positive feeling than other mothers during childcare activities, but the size of the coefficient is smaller in magnitude. However, neither mother's race nor ethnicity was statistically significant in any model.

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[9] Additional time controls, such as whether or not the time diary information is collected on a holiday, leave results almost virtually unchanged. Other covariates such as mother's age, age squared, number of children, age of youngest child, weekly earnings, total hours worked per week, and marital status (whether mother is single) are not included in Model 1 because we consider these variables endogenous. Timing of having children and thus spending time with them depends on mother's employment, income, etc. However, whether we include or exclude these variables, the results are qualitatively similar.

6.1 Expanded Models

College-educated mothers do not find childcare more enjoyable than mothers with no college degree; however, they may value childcare relatively more with respect to other activities. To test this, we exploit the multiple reports by mothers for three randomly selected activities. More specifically, we pool reports of all activities and estimate the following expanded model:

$$Y_{ij}^{feel} = \alpha + \varphi College_i + \gamma ChildCare_{ij} + \delta College_i \times ChildCare_{ij}$$

$$+ \sum_{k=1}^{4} \theta^k Activity_{ij}^k + \sum_{k=1}^{4} \vartheta^k College_i \times Activity_{ij}^k$$

$$+ X_i \beta + \varepsilon_{ij} \qquad\qquad\qquad \text{(Model 2)},$$

where Y_{ij}^{feel} is the constructed measures of feelings for individual i during activity j; $College_i$ equals one if respondent has a college degree and zero otherwise; $ChildCare_{ij}$ equals one if activity is child care and zero otherwise; $College_i \times ChildCare_{ij}$ is interaction term of the aforementioned indicators; $Activity_{ij}^k \in \{Paidwork_{ij}, Housework_{ij}, WatchingTV_{ij}, Other_{ij}\}$ is an indicator variable equals one if activity is paid work, housework, watching TV, or others for $k = 1, \dots, 4$, respectively; X_i includes exogenous demographic characteristics and dummy variables for year, month, and day of the interview; and ε_{ij} is error term. The omitted activity group is leisure; therefore, the coefficient γ captures how mothers feel during childcare compared to leisure activities. The coefficient δ, our parameter of interest in this model, indicates whether spending time in childcare generates more positive feelings for highly educated mothers than for other mothers.

With information about multiple activities per person, we can also estimate a person-level fixed-effect model to account for any unobserved characteristics that are invariant by mother that might shape how they report their feelings—for example, being an inherently negative person or

inherently optimistic person that does not vary by time or context. By including individual fixed-effects, Model 2 becomes

$$Y_{ij}^{feel} = \alpha + \gamma ChildCare_{ij} + \delta College_i \times ChildCare_{ij} + \sum_{k=1}^{4} \theta^k \, Activity_{ij}^k$$

$$+ \sum_{k=1}^{4} \vartheta^k \, College_i \times Activity_{ij}^k + \theta_i + \varepsilon_{ij} \qquad \text{(Model 3)},$$

where θ_i is individual fixed effect, which absorbs mother invariant observable characteristics ($College_i$ and X_i) and invariant unobservable characteristics.

Using our three constructed measures of feelings as dependent variables, Table 6 presents the estimates for Model 2 excluding covariates (columns 1, 4, and 7), Model 2 including covariates (columns 2, 5, and 8), and Model 3 with fixed effects (columns 3, 6, and 9). These estimations use the sample of all mothers in the Well-being Module ($N = 6,869$). Spending time in childcare is associated with higher positive feelings, as prior studies have shown (Wang 2013). However, the interaction between the college education dummy and the childcare dummy is not statistically significant in any of the specifications, which suggests that college-educated mothers experience no more positive feelings from childcare than other mothers (despite spending more time on this activity). Recall that the (between-person) OLS estimates suggested that college-educated mothers experienced significantly less positive feeling during child care activities, whereas these (within-person) analyses show that college-educated mothers and less-educated mothers have similar levels of positive feeling during childcare activities. The difference in results is likely due to the fact that college-educated mothers report less positive feeling in general, no matter what activity they are spending time in.

6.2 Robustness checks

We additionally experimented with constructing other summary measures (including an

indicator for "very positive" feelings, "very negative" feelings, and a U-index to take account of nonlinearity in feelings. We also measured each feeling separately (i.e., happy, meaningful, stress, tired, and sad). The latter is important because in the literature on the measurement of subjective well-being, 'meaning' is a eudaimonic measure that taps something different than happiness or general positive affect and this may be a measure that crosses the positive-negative dimension (National Research Council, 2013). If highly educated mothers spend more time with their children not because they enjoy it, but because they see it as an investment, then 'meaning' could reasonably capture the investment motive.

The results, which are shown in Table 8, are qualitatively similar in that mothers with a college degree report neither higher positive nor lower negative feelings while performing childcare activities relative to their peers. Specifically, the college coefficient in Panel A (OLS model) is statistically negative for meaning and "very positive," indicating that college mothers report lower levels of positive feelings. The coefficient for tired measure is negative and marginally significant at 10% level. However, after taking into account individual-invariant observables and unobservable in Panel B (fixed-effects model), the reports for various measures of well-being are indistinguishable between college-educated and non-college-educated mothers. The exception is sadness, in which college mothers now report higher values, and "very negative," but the latter is close to zero. Few mothers report very high negative feelings.

We also examined specific types of time spent with children, separating education-based activities from other activities. Following Kalil et al. (2012), we further categorized childcare activities into teaching, which includes reading to the child or helping with homework; play, which includes playing games and doing arts and crafts; basic care, which refers to physical care and looking after the child; and management, which includes planning and organizing child's life

outside home. Results are presented in Table 9. Although the number of activity-mother observations varies between 349 and 20,450 depending on the specification, we find qualitatively similar patterns in that for education-based activities (teaching and play), basic care, and management, college-educated mothers do not report higher positive feelings despite spending more time in these activities[10].

6.3 Sensitivity Tests of Selection Bias Related to Eligibility to Report Feelings

As reported earlier, mothers without college degrees are less likely than mothers with a college degree to spend time with their children. Mothers who did not spend any time in childcare activities during the 24-hour period of inquiry were not eligible to report their feelings for this activity. If mothers do not spend time in childcare because it is not pleasant to do so, then the average reports from mothers who are eligible to report their feelings may be upwardly biased—that is, mothers with reported feelings during childcare activities may derive particular pleasure from it. Moreover, if the relationship between feelings during childcare activities and the amount of time one spends in childcare systematically varies by mother's education, then selection on having spent time with a child may bias our results. We perform a sensitivity analysis to bound estimates that take into account these potential sources of bias.

We assume one extreme scenario that could drive bias in our results—that is, that only the less-educated mothers who enjoy spending time with their children are spending time with their children (hence, subsequent reports of feelings are positively skewed). We ask how many

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[10] In our data, mothers with no college degree spent 16.9 minutes per day playing and 17.22 minutes in teaching activities with their children. In contrast, their college-educated counterparts spent 24.39 and 21.03 minutes in these activities, respectively. The between groups differences are statistically significant at 5%.

less-educated mothers with reports of negative feelings must populate the analytic sample in order to overturn our findings.[11]

We begin by assigning the most negative feelings for time spent in childcare to mothers who reported no time spent with children. These mothers are assigned a score of zero for happiness and meaningful feelings and a score of six for each feeling related to stress, sadness, and being tired. We also assume they spend the same average amount of time in childcare as all other mothers in their education group who did report spending time in childcare. This second assumption is necessary because the sampling weights are adjusted by the length of the activity.

The second step of our sensitivity analysis is to select the sample of mothers for whom we will impute negative feelings associated with time spent in childcare. For each mother in the less-than-college group who did not report any time in childcare ($N = 1,172$), one observation is created with new information about their feelings for this activity. This observation, as specified above, has scores of zero for happy and meaningful and six for stress, sad, and tired. Its weight is adjusted by 33.38.[12] Then, X percent of these mothers are randomly selected with the following procedure: (i) random numbers are drawn with uniform distribution from zero to one, (ii) if the number is less than X percent, the mother is selected for the imputed value, and (iii) if the number is greater than X percent, she is not selected. We then reestimate the models with the

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[11] Sensitivity analysis may be related with power of a test. Null hypothesis is $\delta = 0$ and alternative hypothesis is $\delta > 0$, where δ is the coefficient of $College_i$ in restricted model (Model 1) or the coefficient of interaction term $College_i \times ChildCare_{ij}$ in extended models (Models 2 and 3). Assuming that the alternative hypothesis is true, we will increase the sample of mothers in less-than-college group reporting the worst feelings so that we reject the null hypothesis.

    Another way to perform the sensitivity analysis is by increasing the sample of mothers in the college group reporting extremely positive feelings, but this exercise contradicts the theory of time allocation because they would have engaged in childcare and reported these feelings in the first place.

[12] 33.38 minutes represent the unweighted average duration of selected childcare activities for mothers with no college degree in the Well-being Module, and they do not necessarily correspond to the total time spent in childcare during the day. For instance, if a mother spent 30 minutes with her son in the morning and 30 minutes at night, average duration of childcare activity is 30 but total time during the day is 60.

new sample of low-educated mothers with imputed estimates of negative feelings associated with time spent in childcare, while holding the number of college-educated mothers fixed. More specifically, we allow X, the percentage of mothers with no college degree with imputed values of negative feelings, to take values of 0, 10, 20, and so on. An X equal to 10 means that 10% of mothers in the less-than-college group who did not spend any time with their children are now assumed to be reporting negative feelings. For each value of X, we reestimated the OLS (between group) and person-level fixed-effects (within group) models. Given that X percent of mothers are randomly selected, 100 simulations were done for each value of X.[13] We report the δ coefficient of $College_i$ variable for Model 1 and of interaction term $College_i \times Childcare_{ij}$ for Model 3.

Table 7 columns 1, 2, and 3 present the results. The table presents the mean of the estimates for the college coefficient of the 100 simulations, mean of the standard error of the coefficient, and the fraction of times the coefficient does not statistically differ from zero at a 5% level of statistical significance. Panel A presents the base results as reported in Tables 5 and 6. Panels B and C present results varying the proportion of mothers assumed to have negative affect during time spent in childcare. These simulations suggest that approximately 20% of less-educated mothers who did not report spending time in childcare would need to report the worst negative feelings about spending such time in order to overturn our findings.[14] To put this number into perspective, in the original ATUS Well-being sample, the percent of mothers with

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[13] In the reestimated models, new total sample of mothers stays the same ($N = 6,869$), but sample of mothers who spend time in childcare and report feelings for this activity increases by about $1,172 \times X\%$ ($N = 2,838 + 1,172 \times X\%$). Total number of childcare activities rises by same amount ($N = 3,815 + 1,172 \times X\%$) as well as total number of activities ($N = 20,450 + 1,172 \times X\%$).

[14] Specifically, including 18% of unobserved feelings would almost surely yield a positive and statistically significant estimate of college coefficient for positive feelings. These percentages to overturn estimates for negative feelings and net affect are about 3% and 9%, respectively.

no college degree that have an unstandardized average of zero positive feelings on any activity is 3.7%, an average of six on negative feelings is 1.5%, and an average of zero for positive feelings *and* six for negative feelings for a given activity is 0.4%. Thus, the 20% estimated share of the sample of less-educated mothers with such strong negative feelings necessary to reverse our findings is quite large.

Results for the sensitivity analysis for Model 3 (within-group differences) are presented in columns 4, 5, and 6 of Table 7. To overturn our findings in this model, less than 10% of mothers who did not spend any time in childcare must report the most negative feelings.[15] That this estimate is lower than the 20% estimated from the OLS models is not surprising, because the unstandardized average positive feeling for low-educated mothers who did not spend time in childcare is 4.5, and thus adding observations with zero values of feelings will dampen within person comparisons.

In summary, our sensitivity analyses suggest that between 10% and 20% of low-educated mothers would have had to report the worst feelings for childcare in order to reverse our findings.

7 Discussion

Why do highly educated parents spend more time in childcare than less-educated parents who have the same hours of employment and number of children? Economic theories of time allocation suggest that highly educated parents might expect a higher return to the time they spend with their children in terms of the child's future economic security. Parents might be motivated to invest time with their children to achieve these goals whether or not that time

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[15] The percent of mothers to change our findings in Model 3 for positive feelings, negative feelings, and net affect are about 6%, 5%, and 5%, respectively.

investment is enjoyable. The same theories suggest that highly educated parents might spend relatively more time with their children because they get more enjoyment from doing so. The distinction between direct and investment utility is important because policy makers have long tried to increase parents' time in childcare, emphasizing both the enjoyment motive by highlighting how much fun it is to play with one's children and the investment motive by conveying to parents the importance of childcare time that support children's cognitive or socio-emotional development.

Bianchi (2000) observed that the dramatic increase in female employment outside the home in the last half of the twentieth century was not accompanied by a reallocation of time away from children. To maintain their time in childcare even as their work hours increased, employed mothers reduced their time in leisure and personal care activities (Bianchi et al. 2006). If direct utility from time in childcare is low and investment utility is high (because of an expected high return to educational inputs), then as wages increase parents are likely to purchase more nonparental care as long as the parent believes such nonparental care is of equal or greater quality than their own care. Empirical evidence suggests that more highly educated parents do purchase more nonparental time for their children in the form of enriching lessons, sports, and the like (Phillips 2011), although this appears to substitute for time children spend in other types of unstructured, less developmentally stimulating time (Hsin and Felfe 2014).

Using data from the 2010–13 ATUS Well-being Module, we examine mothers' reports of how they feel during childcare and in other activities to try to derive empirical evidence pertaining to economic theories of time allocation. We find, as did Wang (2013), that for all mothers, spending time in childcare is associated with higher positive feelings than is spending time in other activities. However, despite spending more time in childcare, our findings offer no

support for the hypothesis that highly-educated mothers enjoy time in childcare more than their less-educated counterparts. Economic theories of time allocation lead us, given these findings, to hypothesize that the education-based differences may therefore be driven by an investment motive. We acknowledge, however, that economic theories also make assumptions that parent time allocation decisions are rational, i.e. made under conditions of full information, stable preferences, and with clear calculations of future benefits. These assumptions may or may not be borne out in which case other complementary theories, such as those drawn from psychology and sociology, can expand to alternative hypotheses underlying why enjoyment may or may not influence education-based differences in childcare including the role of social norms, peers, and parental identity.

The time diary and well-being data we use here do not allow us to test differences by education in mothers' inclination to substitute nonmaternal care for their time in childcare, nor can we test the potentially important role of differential returns to time with mothers with differing education levels. And, an important caveat to this study is that information about how people feel when they spend time doing certain things cannot be used to make causal statements about how individuals should optimally allocate their time. To make such causal statements, we would have to know how time spent during particular episodes affects well-being at other times (spill over) or why people choose to engage in certain activities in the first place (selection). Most people probably believe that individuals sort the activities that they engage in based on, in part, how much enjoyment they derive from them while doing them. Ruling out this explanation we can turn our focus toward other explanations. For instance, people might spend time in activities because it produces other future benefits or because it affects others' well-being. This work can serve as a starting point for studies to more fully understand parents' own well-being

across and within certain activities, the implications for their own health and outcomes, and the

outcomes of their children.

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Table 1 Sample Sizes of the ATUS and Well-being Module

| | | ATUS | Well-being Module | | |
| | | Both education groups | Both education groups | Less than college | College |
		(1)	(2)	(3)	(4)
1	Women and men	37,088	34,565	23,256	11,309
2	Women only	20,657	19,264	12,988	6,276
3	Women 25–60 years old	13,097	12,288	7,404	4,884
4	Mothers (women 25–60 with a child<18)	7,355	6,869	3,979	2,890
5	Mothers who reported any time in childcare activities	5,500	5,139	2,807	2,332
6	Mothers who reported feelings for childcare activities	-	2,839	1,495	1,344
7	Percentage of mothers who reported any time in childcare activities	74.8%	74.8%	70.5%	80.7%
8	Percentage of mothers who reported feelings for childcare activities	-	41.3%	37.6%	46.5%
9	For mothers that reported any time in childcare, percentage of them who reported feelings for childcare activities	-	55.2%	53.3%	57.6%

Note: Data come from 2010, 2012, and 2013 ATUS and its Well-being Module. Both education groups represent the whole sample, less-than-college group includes individuals with no college degree, and college group includes individuals with a college degree or higher.

Table 2 Characteristics of Mothers in Well-being Module by Education Group

	Mothers			Mothers who Reported Feelings for Childcare Activities		
	Both education groups (1)	Less than college (2)	College (3)	Both education groups (4)	Less than college (5)	College (6)
College	0.38	0	1	0.43	0	1
	(0.01)	(.)	(.)	(0.01)	(.)	(.)
Age	38.27	37.45	39.63***	36.52***	35.44	37.96***
	(0.09)	(0.12)	(0.13)	(0.13)	(0.18)	(0.18)
White non-Hispanic	0.61	0.53	0.74***	0.64**	0.56	0.74***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Black non-Hispanic	0.12	0.14	0.09***	0.10***	0.11	0.08*
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Hispanic	0.2	0.28	0.07***	0.19	0.28	0.07***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Other race	0.07	0.05	0.10***	0.07	0.05	0.10***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
Employed	0.67	0.62	0.76***	0.63***	0.56	0.72***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Full-time employed[a]	0.69	0.66	0.73***	0.66**	0.62	0.69**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Age of youngest child	7.26	7.55	6.77***	5.35***	5.57	5.06*
	(0.06)	(0.08)	(0.10)	(0.09)	(0.12)	(0.12)
Youngest child is <= 6 years old	0.5	0.48	0.52**	0.65***	0.64	0.65
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Number of children	1.95	2	1.86***	2.09***	2.2	1.95***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Only one child	0.38	0.38	0.38	0.30***	0.29	0.31
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N (mothers)	6,869	3,979	2,890	2,839	1,495	1,344

[a] *Sample restricted to individuals who are employed.*
Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Both education groups are the sum of less-than-college and college groups, less-than-college group includes individuals with no college degree, and college group includes individuals with a college

degree or higher. Means are reported and standard errors are in parentheses. Test for difference in means within and between samples are carried out. For columns 3 and 6, we compare against columns 2 and 5, respectively (within sample). For column 4, we compare against column 1 (between sample). Asterisks denote significance level: † p<.10, * p<.05, ** p<.01, *** p<.001. Mother level variables are weighted by respondent level weights.

Table 3 Reported Feelings during Each Major Activity by Education Group

	All Activities (1)	Childcare (2)	Paid Work (3)	Housework (4)	Watching TV (5)	Leisure (6)	Other (7)
Panel A: Less than college							
Happy	4.46	4.89	4.17***	4.24***	4.54	4.53	4.63***
	(1.65)	(1.46)	(1.50)	(1.76)	(1.59)	(1.87)	(1.62)
Meaningful	4.64	5.40	4.45***	4.52***	4.14***	4.75***	4.79***
	(1.82)	(1.28)	(1.74)	(1.92)	(2.03)	(1.81)	(1.79)
Sad	0.66	0.39	0.73+	0.68***	0.90+	0.57	0.60***
	(1.44)	(1.12)	(1.47)	(1.46)	(1.64)	(1.41)	(1.41)
Stressed	1.70	1.51	2.32***	1.64	1.37	1.36	1.66*
	(1.93)	(1.83)	(1.91)	(1.89)	(1.80)	(1.90)	(1.98)
Tired	2.72	2.86	2.63	2.80	3.22	2.44+	2.50**
	(2.05)	(2.15)	(1.97)	(2.05)	(1.99)	(2.09)	(2.03)
N (activities)	11,837	2,004	1,083	2,493	851	964	4,442
N (mothers)	3,979	1,495	821	1,919	789	861	2,850
Panel B: College							
Happy	4.29**	4.70**	3.91**	3.87***	4.51	4.65	4.48***
	(1.40)	(1.29)	(1.34)	(1.53)	(1.31)	(1.27)	(1.39)
Meaningful	4.33***	5.12***	4.29***	3.96***	3.28*	4.65**	4.40***
	(1.76)	(1.33)	(1.63)	(1.86)	(2.04)	(1.61)	(1.75)
Sad	0.46***	0.33+	0.61+	0.46***	0.47	0.39	0.40*
	(1.09)	(0.90)	(1.17)	(1.12)	(1.04)	(1.09)	(1.08)
Stressed	1.72	1.48	2.78***	1.60	0.83*	1.11*	1.44
	(1.77)	(1.58)	(1.74)	(1.70)	(1.30)	(1.56)	(1.68)
Tired	2.60*	2.64	2.49	2.69	3.29*	2.57	2.33***
	(1.84)	(1.80)	(1.77)	(1.87)	(1.72)	(1.90)	(1.86)
N (activities)	8,613	1,811	832	1,687	407	714	3,162
N (mothers)	2,890	1,344	631	1,343	379	643	2,066

*Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Less-than-college group includes individuals with no college degree, and college group includes individuals with a college degree or higher. Means are reported and standard deviation is in parentheses. Test for difference in means within and between groups are carried out. For columns1 and 2, we compare college group against less than college group (between group). For columns 3-7, we compare against column 2 (within group). Asterisks denote significance level: † p<.10, * p<.05, ** p<.01, *** p<.001. Activity level variables are weighted by activity level weights.*

Table 4 Standardized Well-being Indices for Each Major Activity by Education Group

	All Activities (1)	Childcare (2)	Paid Work (3)	Housework (4)	Watching TV (5)	Leisure (6)	Other (7)
Panel A: Less than college							
Positive Standardized	0.00	0.41	-0.17***	-0.12***	-0.15***	0.06**	0.11***
	(1.00)	(0.76)	(0.93)	(1.05)	(1.08)	(1.05)	(0.97)
Negative Standardized	0.00	-0.08	0.15+	0.01+	0.10	-0.17	-0.08
	(1.00)	(0.93)	(0.99)	(1.01)	(1.00)	(0.99)	(1.02)
Net Affect	0.00	0.32	-0.20***	-0.09***	-0.16***	0.15	0.12***
	(1.00)	(0.85)	(0.96)	(1.01)	(1.01)	(1.07)	(1.00)
N (activities)	11,837	2,004	1,083	2,493	851	964	4,442
N (mothers)	3,979	1,495	821	1,919	789	861	2,850
Panel B: College							
Positive Standardized	-0.17***	0.24***	-0.31***	-0.44***	-0.45***	0.07*	-0.08***
	(0.92)	(0.76)	(0.85)	(0.99)	(0.90)	(0.86)	(0.93)
Negative Standardized	-0.07**	-0.16*	0.20**	-0.08*	-0.12	-0.25	-0.23**
	(0.84)	(0.78)	(0.87)	(0.83)	(0.71)	(0.83)	(0.84)
Net Affect	-0.07*	0.26*	-0.33***	-0.24***	-0.23***	0.20	0.09***
	(0.90)	(0.80)	(0.87)	(0.92)	(0.79)	(0.83)	(0.92)
N (activities)	8,613	1,811	832	1,687	407	714	3,162
N (mothers)	2,890	1,344	631	1,343	379	643	2,066

*Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Less-than-college group includes individuals with no college degree, and college group includes individuals with a college degree or higher. Positive standardized is constructed by taking the average of happiness and meaningfulness and standardized with the mean and standard deviation of the less-than-college group. Negative standardized uses the sadness, stress, and tiredness. Net affect is the difference between average positive and negative feelings and standardized with less-than-college group's mean and standard deviation. Means are reported and standard errors are in parentheses. Test for difference in means within and between groups are carried out. For columns 1 and 2, we compare college group against less than college group (between group). For columns 3-7, we compare against column 2 (within group). Asterisks denote significance level: † p<.10, * p<.05, ** p<.01, *** p<.001. Activity level variables are weighted by activity level weights.*

Table 5 OLS Regression Results: Effect of College Degree on Feelings during Childcare Activities

	Positive Standardized		Negative Standardized		Net Affect	
	(1)	(2)	(3)	(4)	(5)	(6)
College	-0.16***	-0.13**	-0.08	-0.08	-0.06	-0.04
	(0.05)	(0.04)	(0.06)	(0.05)	(0.04)	(0.05)
Constant	0.41***	0.39***	-0.08	-0.44**	0.32***	0.53***
	(0.04)	(0.11)	(0.05)	(0.15)	(0.03)	(0.14)
Controls	No	Yes	No	Yes	No	Yes
N (activities)	3,815	3,815	3,815	3,815	3,815	3,815
N (mothers)	2,838	2,838	2,838	2,838	2,838	2,838

Note: Data come from Module 2010, 2012, and 2013 ATUS Well-being. Standard errors are in parentheses, and they are clustered at the respondent level. Activity level weights are used. Specification with controls includes mother's race and ethnicity, days of the week indicators, month indicators, and year dummies. Asterisks indicate significance level: † p<.10, * p<.05, ** p<.01, *** p<.001.

Table 6 Fixed-Effects Regression Results: Effect of Childcare Time and College Degree on Feelings

	Positive Standardized			Negative Standardized			Net Affect		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
College	0.01	0.03		-0.07	-0.05		0.05	0.05	
	(0.10)	(0.10)		(0.08)	(0.08)		(0.10)	(0.09)	
Childcare	0.35***	0.34***	0.19***	0.09	0.08	0.11*	0.17*	0.18*	0.06
	(0.09)	(0.09)	(0.06)	(0.07)	(0.07)	(0.05)	(0.08)	(0.08)	(0.06)
College x Childcare	-0.17	-0.17	-0.07	0	0	0.03	-0.11	-0.11	-0.07
	(0.11)	(0.11)	(0.08)	(0.10)	(0.10)	(0.07)	(0.10)	(0.10)	(0.07)
Constant	0.06	0.08	0.12***	-0.17**	-0.23*	-0.15***	0.15+	0.19+	0.17***
	(0.08)	(0.11)	(0.03)	(0.06)	(0.11)	(0.03)	(0.07)	(0.11)	(0.03)
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Individual Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
N (activities)	20,450	20,450	20,450	20,450	20,450	20,450	20,450	20,450	20,450
N (mothers)	6,869	6,869	6,869	6,869	6,869	6,869	6,869	6,869	6,869

Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Standard errors are in parentheses, and they are clustered at the respondent level in the specifications without individual fixed effects. Activity level weights are used. All specifications include indicators for each major activity (paid work, housework, childcare, watching TV, and others) as well as interactions of these indicators with college dummy. Leisure activity is the omitted category. Specification with controls includes mother's race and ethnicity, days of the week indicators, month indicators, and year dummies. Asterisks indicate significance level: † p<.10, * p<.05, ** p<.01, *** p<.001.

Table 7 Sensitivity Analysis: Percentage of Mothers with no College Degree Reporting their Unobserved Feelings and its Effect on Estimations of Group Differences

	Model 1: OLS with Childcare Activities			Model 3: Fixed-Effects with Pooled Activities		
	Positive Standardized (1)	Negative Standardized (2)	Net Affect (3)	Positive Standardized (4)	Negative Standardized (5)	Net Affect (6)
Panel A: 0 percent						
Coefficient[a]	-0.13	-0.08	-0.04	-0.07	0.03	-0.07
	(0.04)	(0.05)	(0.05)	(0.08)	(0.07)	(0.07)
$p<0.05$	1	0	0	0	0	0
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	3,815	3,815	3,815	20,450	20,450	20,450
N (mothers)	2,838	2,838	2,838	6,869	6,869	6,869
Panel B: 10 percent						
Coefficient[a]	0.00	-0.20	0.12	0.34	-0.37	0.45
	(0.05)	(0.05)	(0.05)	(0.09)	(0.08)	(0.09)
$p<0.05$	0	1	0.93	1	1	1
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	3,931.8	3,931.8	3,931.8	20,566.8	20,566.8	20,566.8
N (mothers)	2,954.8	2,954.8	2,954.8	6,869.0	6,869.0	6,869.0
Panel C: 20 percent						
Coefficient[a]	0.12	-0.30	0.26	0.65	-0.66	0.81
	(0.05)	(0.05)	(0.05)	(0.09)	(0.08)	(0.09)
$p<0.05$	0.95	1	1	1	1	1
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	4,048.8	4,048.8	4,048.8	20,683.8	20,683.8	20,683.8
N (mothers)	3,071.8	3,071.8	3,071.8	6,869.0	6,869.0	6,869.0

[a] *Coefficient refers to college coefficient for Model 1 and coefficient of interaction term between college dummy and childcare indicator for Model 3.*

Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Each Panel represents scenarios under which X percent of mothers with no college degree may report their unobserved feelings. 100 simulations per scenario. Model 1 uses sample of reported feelings for childcare activities only, and it is OLS regression of outcome on college indicator and a set of covariates including mother's race and ethnicity, days of the week indicators, month indicators, and year dummies. Model 3 pools reported feelings for all activities, and it estimates regression with

respondent fixed-effects and includes indicators for each major activity (paid work, housework, childcare, watching TV, and others) as well as interactions of these indicators with college dummy. In Model 3, leisure activity is the omitted category. Average of estimated college coefficient for Model 1, estimated interaction term for Model 3, standard errors, and sample sizes are presented. Test for the null hypothesis that college coefficient or interaction term is different from zero is carried out, and row p<0.5 shows fraction of simulations not rejecting hypothesis at 5% significance level. Activity level weights are used.

Table 8 Effect of College Degree on Various Measures of Feelings during Childcare Activities

	Happy Std.	**Meaning Std.**	**Stress Std.**	**Tired Std.**	**Sad Std.**	**Very Positive**	**Very Negative**	**U-Index**
	(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Model 1 - OLS with Childcare Activity								
College	-0.07	-0.14***	-0.03	-0.11+	-0.02	-0.14***	0	0.01
	(0.05)	(0.04)	(0.05)	(0.06)	(0.03)	(0.03)	(0.00)	(0.01)
Constant	0.21	0.43***	-0.19	-0.52***	-0.25**	0.49***	0	0.07
	(0.14)	(0.09)	(0.15)	(0.15)	(0.09)	(0.08)	(0.01)	(0.05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (activities)	3,815	3,815	3,815	3,815	3,815	3,815	3,815	3,815
N (mothers)	2,838	2,838	2,838	2,838	2,838	2,838	2,838	2,838
Panel B: Model 3 - Fixed Effects with Pooled Major Activities								
Childcare	0.04	0.26***	0.27***	0.02	-0.08+	0.04	0.01	-0.05*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.03)	(0.00)	(0.02)
College x Childcare	-0.07	-0.06	-0.08	0.06	0.10+	0.03	-0.01+	0.04
	(0.07)	(0.09)	(0.08)	(0.08)	(0.06)	(0.03)	(0.01)	(0.03)
Constant	0.12***	0.09*	-0.25***	0	-0.09***	0.32***	0.01*	0.11***
	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)	(0.01)	(0.00)	(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (activities)	20,450	20,450	20,450	20,450	20,450	20,450	20,450	20,450
N (mothers)	6,869	6,869	6,869	6,869	6,869	6,869	6,869	6,869

Note: Data come from ATUS Well-being Module 2010, 2012, and 2013. Happy std. is reported feeling for happiness minus control group's happiness mean and divided by control group's standard deviation, and similarly for the other feelings (meaning, stress, tired, and sad). Very positive equals 1 if scores for happiness and meaningful are equal to 6. Very negative equals 1 if scores for stress, tired, and sadness equal 6. U-Index equals 1 if the maximum rating on any of the negative feelings (stressed, tired, and sad) is strictly greater than the maximum rating on any of the positive feelings (happy and meaningful). Standard errors are in parentheses, and they are clustered at the respondent level in the specifications without individual fixed effects. Activity level weights are used. Model 1 uses sample of mothers reporting feelings for childcare activity

only, and it is OLS regression of outcome on college indicator and a set of covariates including mother's race and ethnicity, days of the week indicators, month indicators, and year dummies. Model 3 pools reported feelings for each major activity (paid work, housework, childcare, watching TV, and others). This model estimates regression with respondent fixed-effects and includes indicators for each activity category as well as interactions of these indicators with college dummy. In Model 3, leisure activity is the omitted category. Asterisks indicate significance level: † p<.10, * p<.05, ** p<.01, *** p<.001.

Table 9 Effect of College Degree on Feelings during Specific Childcare Activities

|	Model 1: OLS with Specific Activity			Model 3: Fixed Effects with Pooled Major and Childcare Activities		
	Positive Standardized (1)	Negative Standardized (2)	Net Affect (3)	Positive Standardized (4)	Negative Standardized (5)	Net Affect (6)
Panel A: Basic Care						
Coefficient [a]	-0.02	-0.20**	0.1	-0.02	-0.03	0
	(0.06)	(0.07)	(0.07)	(0.09)	(0.08)	(0.08)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	1,586	1,586	1,586	20,450	20,450	20,450
N (mothers)	1,385	1,385	1,385	6,869	6,869	6,869
Panel B: Play						
Coefficient [a]	-0.05	0	-0.03	0.12	-0.11	0.15
	(0.07)	(0.08)	(0.07)	(0.12)	(0.10)	(0.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	349	349	349	20,450	20,450	20,450
N (mothers)	330	330	330	6,869	6,869	6,869
Panel C: Teaching						
Coefficient[a]	-0.05	0.26*	-0.19+	-0.11	0.14	-0.16
	(0.09)	(0.12)	(0.12)	(0.12)	(0.11)	(0.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	427	427	427	20,450	20,450	20,450
N (mothers)	415	415	415	6,869	6,869	6,869
Panel D: Management						
Coefficient [a]	-0.27***	0.01	-0.19*	-0.25**	0.14	-0.25*
	(0.07)	(0.08)	(0.08)	(0.10)	(0.09)	(0.10)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	No	Yes	Yes	Yes
N (activities)	1,453	1,453	1,453	20,450	20,450	20,450
N (mothers)	1,172	1,172	1,172	6,869	6,869	6,869

[a] *Coefficient is college coefficient for Model 1 and coefficient of interaction term between college dummy and activity indicator for Model 3.*

*Note: Data come from ATUS Well-being Module 2010, 2012, and 2013. Standard errors are in parentheses, and they are clustered at the respondent level in the specifications without individual fixed effects. Activity level weights are used. Model 1 uses sample of mothers reporting feelings for the specified activity only, and it is OLS regression of outcome on college indicator and a set of covariates including mother's race and ethnicity, days of the week indicators, month indicators, and year dummies. Each panel in each column under Model 1 comes from separate regressions. Model 3 pools reported feelings for each major activity (paid work, housework, childcare, watching TV, and others) and further disaggregates childcare activities into basic care, play, teaching, and management. This model estimates regression with respondent fixed-effects and includes indicators for each activity category as well as interactions of these indicators with college dummy. In Model 3, leisure activity is the omitted category. The four panels in each column under Model 3 come from the same pooled regression. Asterisks indicate significance level: † p<.10, * p<.05, ** p<.01, *** p<.001.*

Fig. 1 Time Spent (Minutes) in Various Activities by Education Group

Panel A: Mothers in Well-being Module
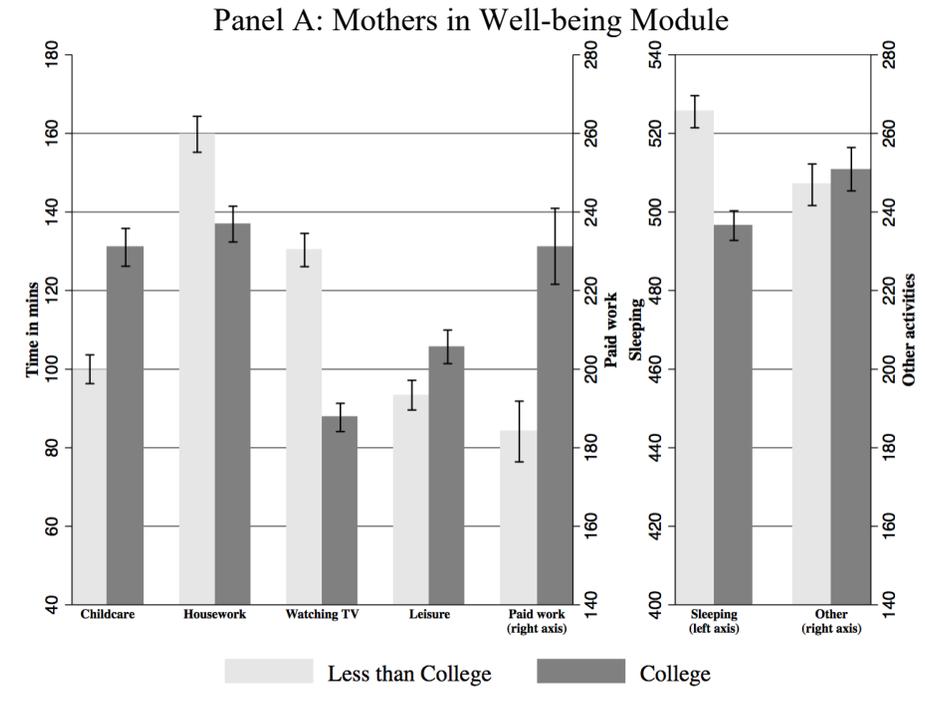
Panel B: Restricted to Mothers who Reported at Least Some Time in the Activity
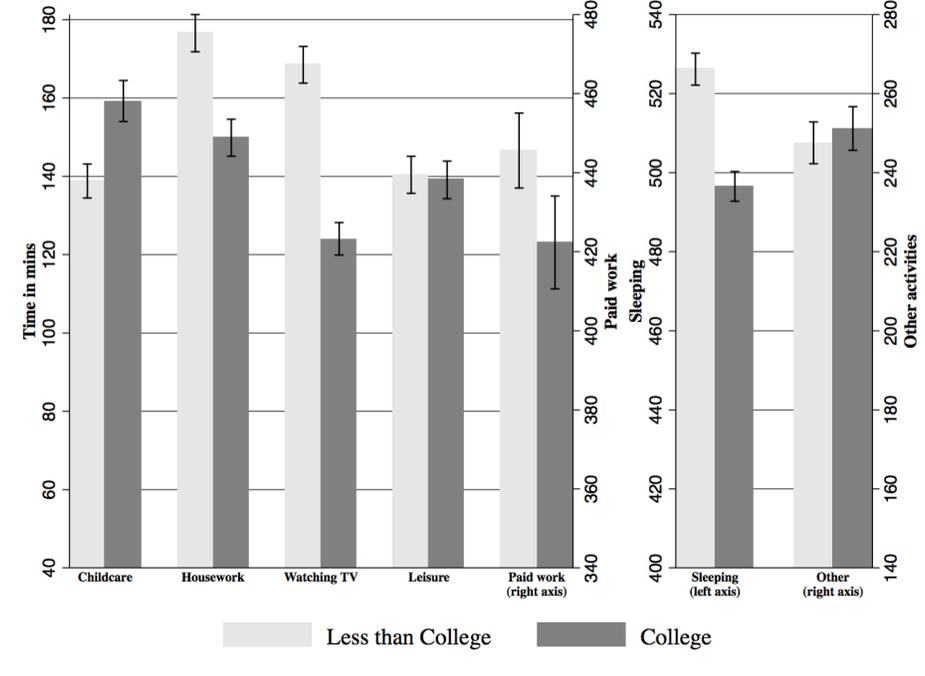
Note: Data come from 2010, 2012, and 2013 ATUS Well-being Module. Each bar indicates the average time (in minutes) spent in various activities on a day for each education group. 95%

confidence intervals are represented by the vertical lines. Estimates are weighted by respondent level weights.