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Gender differences in parents' time with children and daily emotional wellbeing – does child's gender matter?

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Research problem and relevance

Although most adults have positive attitudes toward parenthood and perceive it as a rewarding life-pursuit, research shows a more complex picture of parental well-being and emotional states associated with parenthood. Overall, people report a variety of emotions while parenting, ranging from meaningful and pleasurable to monotonous, stressful, and tiring (Blair-Loy 2003; Deaton and Stone 2013; Musick, Meier, and Flood 2016). More recently, Musick and colleagues (2016) finds differences between father's and mother's reports of emotions during the actual time that parents spend with their children, revealing that mothers experience more negative emotions during childrearing activities. However, no research to date has examined how the *sex of a child* may influence how parents feel during different child activities.

This gap in the literature exists despite the fact that how people feel during time spent with boys and girls may influence potential gender gaps in divisions of labor and the total time each parent spends with a child. Researchers have, indeed, identified that the sex of a child does influence the amount of time parents spend with their children, particularly for fathers (Lundberg 2005; Lundberg, Sabrina Wulff, and Ward-Batts 2007; Mammen 2011). Less clear, however, is *why* mothers and fathers spend more or less time with boys and girls at particular age periods.

Using American Time Use Survey (ATUS) and survey questions from ATUS's Wellbeing Module (waves 2010, 2012, 2013), we examine if, and how, the sex of a child influence's mother's and father's *emotional states* (feelings of happiness, stress, etc.) during childcare activities. We also examine whether parent's emotional states during time spent with either boys or girls are associated with greater or lesser amount of time that mothers and fathers devote to a particular child's sex. Given persistent gaps in childcare time between mothers and fathers particularly for daughters, we are especially interested in whether men who report more

favorable emotions during time spent with daughters report a greater amount of time spent with them. Lastly, we assess whether the association between the sex of a child and parent's emotional states during childcare activities varies across the age of the child, revealing unique well-being patterns for different child-stages.

Methods

Data

The American Time Use Survey (ATUS) is a nationally-representative time diary survey conducted annually from 2003 through 2014, sponsored by the Bureau of Labor Statistics and collected by the U.S. Census Bureau. At each survey wave, a random subset of individuals participating in the Current Population Survey (CPS) were selected to participate in the ATUS and interviewed through computer-assisted telephone interviewing about the duration and type of activities that they participated in over the previous 24 hours. The diary day started at 4 am and ended at 4 am the next day in order to cover most wakeful hours. Respondents reported where the activity took place, and who was present. Activities are coded by trained staff to ensure consistent classification of activities across respondents. Sociodemographic information about the respondent and the members of their household comes from the CPS, which was conducted two to five months prior to the ATUS interview.

In 2010, 2012, and 2013, ATUS included the Subjective Wellbeing Module. This module was conducted at the end of the interview, during which participants were asked to rate how they felt along six dimensions—happy, meaning, sad, stressed, pain and fatigued—in three activities which were randomly selected from their time diary. This study draws on five of these six assessments. I exclude the measure of pain, which is used more in studies of disability and lacks

a theoretical basis for including in this study. Data were accessed through the ATUS-X Extract Builder system (Hofferth, Flood, and Sobek 2015; http://www.atusdata.org).

Sample

The analytic sample was formed by pooling the data across the 12 surveys (2003-2014) and limiting the sample to men and women who were 18 years of age and older and reported having their own household with children 17 years or younger (n = 58,761). We further restricted our sample to fathers and mothers whose time diary was collected on a weekday versus a weekend (n = 28,698). We do not make restrictions based on marital or work status, but we control for these factors and test the robustness of our results to these two subgroups. Descriptive characteristics of this subsample appear in Table 1. The average parents' age is 38. Slightly more than half are women (55% vs. 45% men). About two-thirds of parents identified as European American (63%), followed by Hispanic (19%), African American (11%), Asian (4%) and Other ethnic group (3%). One third of the sample had a college degree, 26% had some college education, 29% had a high school degree, and 12% had no high school degree. The majority of parents were married (80%) and employed (77%). In 42% of households, the youngest child was between ages 0-4; in 38%, the youngest child was between ages 5-12; in 20%, the youngest child was between ages 13-17.

Measures

Time use. We categorized parenting time in seven different parenting activities that span three domains: physical care, developmental care, and other time with children. *Physical care* includes feeding, bathing and providing medical care. *Developmental care* includes time in: *play (*e.g., sports, doing arts and crafts), *teaching* (e.g., reading, homework), and *management* (e.g., attending child's events, attending school conferences). The conceptualization and measurement

of these first four activities follows Kalil and colleagues (2012). Notably, children may not be present for all activities. For example, teaching includes homework, but also attending school meetings. Similarly, management includes attending children's events, but organizing and planning for children as well. The final three measures are *eating*, *watching television* and *outings* (e.g., going to museums). These measures are based on parents' reports of their time in each activity and 'who' was present during them (Bureau of Labor Statistics and U.S. Census Bureau. 2014:51). Parenting time, as opposed to individual time, is designated when parents report at least one child present—an approach used by Guryan, Hurst, and Kearney (2008) and Folbre and Yoon (2007) as well. A complete list of the activities included under each time use category is available upon request. Time is represented in the number of minutes in that activity over a 24-hour day.

Affective wellbeing. In the Wellbeing Module, for each of the three randomly selected activities, respondents were asked to assess on a scale from 0 (not at all) to 6 (very much) how they felt in that activity along five dimensions: happy, sad, stressed, tired, and meaning. These measures of experienced affective wellbeing were modeled based on the Princeton Affect and Time Use Study (Krueger et al. 2009). The order in which each dimension of wellbeing was presented to respondents was randomized, although *meaning* was always asked about last. Activities shorter than 5 minutes, grooming, personal activities, and sleeping were not eligible for the Wellbeing Module.

Independent variables. Our analysis includes two independent variables. The first is parents' *gender* (0 = *male*, 1 = *female*). The second is *child gender*. To account for different configurations of family size and child genders, we created dummy variables identifying for families with one child whether the child is a boy or a girl, and for families with two or more

children, whether there are: all boys; all girls; at least one boy. This strategy reflected the complexity of capturing child gender in households of different sizes and mirrored the approach taken by Mammen (2011).

Covariates. We account for a number of factors that may correlate with parents' time in parenting and their gender (Monna and Gauthier, 2008): respondents' chronological age (measured *continuously*), marital status (dummy coded as *married, single,* and *cohabiting*), race or ethnicity (dummy coded as *European American, African American, Hispanic, Asian* and *Other group*), employment status (dummy coded as *full-time employed, part-time employed, unemployed,* and *not working*), geographic region (dummy coded as *West, Midwest, North,* and *South*), whether they lived in a metropolitan area (0 = *no,* 1 = *yes*), whether they were born in the U.S. (0 = *no,* 1 = *yes*), whether they were a student (0 = *no,* 1 = *yes*), the number of children in the household (ranging from 0 to 10 children and modeled *continuously*), whether a male child was present (0 = *no,* 1 = *yes*) and a female child was present (0 = *no,* 1 = *yes*), family income (captured as an ordinal scale where 1 is *less than $5,000* and 16 is *$150,000 or more*) and time diary information, including whether the diary was recorded in a summer month (0 = *no,* 1 = *yes*), on a holiday (0 = *no,* 1 = *yes*), and the year of the interview (dummy coded).

Analysis Plan

To adjust for different configurations of family size and child genders, we made three sets of comparisons between: (1) families with at least one boy vs. all girls, (2) families with one boy vs. one girl, (3) and families with two or more children that are either all boys or all girls. This strategy reflected the complexity of capturing child gender in households of different sizes and mirrored the approach taken by Mammen (2011). We will pursue this analysis further by teasing out issues of birth order and family size.

For the multivariate analyses, we used OLS regression (ordinary least squares) to predict total minutes in different parenting activities for each of the three types of family. The first set of models (Models 1a-1g presented in Table 2) predicts time in each of the seven parenting categories based on the parents' gender, net of the full set of controls. These models revealed whether parenting time varied by parent gender for each activity in each of the three types of family described above. The second set of models (Models 2a-2g presented in Table 3) interacted the measure of child gender with parent gender to determine whether differences in parenting time in each activity varied at different stages of parenting. Post-hoc estimation tests allowed for an estimation of the size of the gender gap across different child genders, thus determining whether these differences were statistically significant.

A notable issue with using time-use data is that measures of time typically contain high frequencies of zeros, which leads to a non-normal distribution. The large number of zeros are often due to the fact that some respondents do not report having engaged in a certain activity (e.g., some respondents do not report time with children watching television because they do not engage in this activity with children), or there is a mismatch between the observation window and "the period of interest" (they do watch television with their children, but did not that day). Because of the high volume of zeros, some researchers have employed Tobit models over the use of OLS. Tobit models are designed to deal with censored data, as a key assumption of the models is that the dependent variable (i.e., parents' time with children) is not observed over its full range (see Sayer, Bianchi, and Robinson, 2004; Yeung et al., 2001). Recent research, however, finds that estimates from Tobit models are increasingly biased because the proportion of zeros increases, and that "OLS estimates are unbiased and robust to a number of assumptions about the relationship between the variables in the model and the probability of doing an activity"

(Stewart, 2009, p. 12). The use of OLS over Tobit models is also consistent with other recent work using time use data (e.g., Guryan et al., 2008; Hook and Wolfe, 2011).

All time use variables were censored at the 99th percentile to address extreme and, in many cases, improbably high observations. Weighting, adjusted to the 2006 population, was used to account for the complex design of the study, for all years and in all analyses. All models were estimated in Stata 14. Multiple imputation procedures were used to address missingness on the two covariates with missing values: family income and metropolitan area. All other variables were complete. To estimate missingness on the two said covariates, Stata's chained equations were employed to generate 20 complete datasets and the *mi suite* of commands to average estimates across them. The imputation model included all independent and dependent variables, along with the survey weight. Sensitivity tests were also conducted, comparing results from models using the imputed data to results from models using other missing data strategies (listwise deletion, dummy variable), based on the suggestion that missingness on income may violate the MAR assumption (Abraham, Maitland, and Bianchi, 2006). All approaches produced similar results. The results of the models are therefore reported using the multiply imputed data.

For the wellbeing data, we conducted multivariate analyses which estimated the association between parents' gender and the five measures of affective wellbeing using linear regression, with each measure of wellbeing estimated by a separate model. In order to pool across all three reports of wellbeing, random effects were incorporated, which accommodated the nested structure of the data (i.e., three reports of wellbeing nested within individuals), while adjusting for non-independence and correlated measurement error in the reports. Assuming that all confounding factors correlated with the predictor variables are accounted for, they also adjusted for unobserved heterogeneity in the wellbeing reports (Allison 2009; Laird and Ware

1982). This initial step clarified how the positive and negative measures of wellbeing varied between mothers and fathers. As the next step, we examined whether the patterns we observed during *all time* (i.e., all activities taken together) varied when children's gender was taken into consideration.

Preliminary Results

Parents' time with children by child age and child gender: Parents spend more time with children of the same sex, regardless of the child gender, mothers spent more time with their children than fathers do, with two exceptions: for playing and television watching. For these activities, we found that in families with just girls, mothers and fathers spent the *same* amount of time in play and television watching as in families with just boys.

Parents' emotional wellbeing: Analysis is work in progress – results will be available shorty.

Table 1. Descriptive Characteristics of Study Sample (N = 28,698)

Variable	Mean / %	SD
Parenting Activity		
Care	35.03	55.06
Play	15.33	41.39
Teaching	9.32	22.57
Management	9.15	20.58
Eating with a child present	32.08	32.54
Watching TV with a child present	47.65	77.88
Outing with a child present	1.27	11.87
Household Child Characteristics		
Youngest child aged 0 - 4	0.42	-
Youngest child aged 5 - 12	0.38	-
Youngest child aged 13 - 17	0.20	-
Number of children in household	1.93	0.96
Female child in household	67.73	-
Male child in household	70.07	-
Parental Characteristics		
Age	38.14	8.87
Female	0.55	-
Male	0.45	-
Family income group [1]	$50,000 to $59,999	-
Racial/Ethnic Group		
European American	0.63	-
African American	0.11	-
Hispanic	0.19	-
Asian American	0.04	-
Other racial group	0.03	-
Education level		
< High school	0.12	-
High school	0.29	-
Some college	0.26	-
College degree	0.33	-
Employment status		
Full-time employed	0.63	-
Part-time employed	0.14	-
Unemployed	0.06	-
Not working	0.18	-
Marital status		
Married	0.80	-
Single	0.16	-
Cohabiting	0.04	-

Notes: [1] Because ATUS codes categorizes into one of 16 categories, we present the median category. Estimates for region, metropolitan area, student status, season, and survey year not shown.

Table 2. OLS Regression Estimates Predicting Parenting Time. Main effects of Parent's Gender, Child Gender and Child Age.

	1	2	3	4	5	6	7	8
Models 1a-1g.	Care	Play	Teaching	Management	Eating	TV	Outing	N
All families (at least 1 boy vs. all girls)								
Parent Gender (female = 1)	21.01***	0.17	3.88***	5.43***	2.79***	-3.96**	0.46**	28,995
	(0.69)	(0.57)	(0.32)	(0.30)	(0.48)	(1.25)	(0.17)	
Child gender (at least1boy=1)	-0.07	1.72**	0.23	0.64*	-0.88+	0.18	-0.54**	
	(0.73)	(0.61)	(0.30)	(0.28)	(0.50)	(1.27)	(0.18)	
Child age (ref.=0- 4 years)								
5 - 12 years	-30.24***	-20.93***	4.24***	2.45***	-5.78***	-1.11	0.41*	
	(0.82)	(0.68)	(0.41)	(0.32)	(0.54)	(1.32)	(0.19)	
13 - 17 years	-44.41***	-26.09***	-4.07***	-1.53**	-11.18***	-5.15**	-0.34	
	(0.99)	(0.81)	(0.50)	(0.49)	(0.76)	(1.89)	(0.25)	
1 child families (girl vs. boy)								
Parent Gender (female = 1)	17.71***	3.54***	2.82***	3.36***	2.45**	-4.50*	0.53*	10,981
	(1.06)	(0.94)	(0.42)	(0.37)	(0.76)	(2.00)	(0.25)	
Child Gender (female=1)	-0.37	-2.57**	0.01	-0.40	0.61	-2.24	0.51*	
	(1.02)	(0.90)	(0.38)	(0.34)	(0.70)	(1.78)	(0.21)	
Child age (ref.=0- 4 years)								
5 - 12 years	-32.78***	-27.40***	8.43***	3.31***	-4.51***	-4.21+	0.29	
	(1.48)	(1.31)	(0.66)	(0.47)	(1.02)	(2.35)	(0.29)	
13 - 17 years	-46.91***	-32.96***	-0.86	-0.89+	-11.05***	-9.69***	-0.22	
	(1.61)	(1.35)	(0.67)	(0.52)	(1.22)	(2.78)	(0.34)	
1> child families (all girls vs. all boys)								
Parent Gender (female = 1)	20.90***	-2.09*	4.00***	6.99***	1.11	-3.37	0.37	7,248
	(1.38)	(1.02)	(0.66)	(0.67)	(0.95)	(2.43)	(0.42)	
Child gender (female = 1)	1.28	-0.77	-0.76	-0.89	1.51+	3.40	0.43	
	(1.26)	(0.97)	(0.59)	(0.56)	(0.86)	(2.13)	(0.34)	
Child age (ref.=0- 4 years)								
5 - 12 years	-30.78***	-20.07***	4.19***	1.83**	-7.12***	-1.08	0.64	
	(1.52)	(1.22)	(0.78)	(0.65)	(1.02)	(2.59)	(0.44)	
13 - 17 years	-46.07***	-23.73***	-5.11***	-1.23	-10.28***	-0.36	-0.17	
	(1.99)	(1.40)	(1.00)	(1.14)	(1.65)	(4.20)	(0.67)	

Table 3. OLS Regression Estimates Predicting Parenting Time. Two way interaction of parent gender and child gender

Models 1a-1g.	Care	Play	Teaching	Mgmt	Eating	TV	Outing	N
All families (at least one boy vs. all girls)								
Parent Gender (female = 1)	19.91***	3.19***	3.00***	4.87***	2.35**	-0.58	0.61+	28,995
	(1.18)	(0.95)	(0.49)	(0.42)	(0.83)	(2.12)	(0.33)	
Child gender (at least1boy=1)	-0.94	4.11***	-0.46	0.19	-1.23+	2.85	-0.42	
	(0.92)	(0.80)	(0.39)	(0.35)	(0.73)	(1.84)	(0.25)	
Child age (ref.=0- 4 years)								
5 - 12 years	-30.25***	-20.92***	4.24***	2.45***	-5.78***	-1.10	0.41*	
	(0.82)	(0.68)	(0.41)	(0.32)	(0.54)	(1.32)	(0.19)	
13 - 17 years	-44.42***	-26.07***	-4.07***	-1.54**	-11.18***	-5.13**	-0.34	
	(0.99)	(0.81)	(0.50)	(0.49)	(0.76)	(1.89)	(0.25)	
Parent Gender x Child gender								
Female x AtLeast1Boy	1.59	-4.33***	1.26*	0.81	0.63	-4.86*	-0.22	
	(1.36)	(1.12)	(0.58)	(0.51)	(0.95)	(2.39)	(0.34)	
1 child families (girl vs. boy)								
Parent Gender (Female = 1)	16.74***	2.88*	2.38***	2.94***	1.69+	-5.31*	0.45*	10,981
	(1.42)	(1.31)	(0.54)	(0.53)	(1.00)	(2.62)	(0.23)	
Child Gender (female=1)	-1.54	-3.35**	-0.51	-0.90*	-0.30	-3.21	0.41	
	(1.35)	(1.29)	(0.50)	(0.45)	(1.06)	(2.77)	(0.25)	
Child age (ref.=0- 4 years)								
5 - 12 years	-32.78***	-27.40***	8.43***	3.31***	-4.51***	-4.20+	0.29	
	(1.48)	(1.31)	(0.66)	(0.47)	(1.02)	(2.36)	(0.29)	
13 - 17 years	-46.91***	-32.96***	-0.86	-0.89+	-11.05***	-9.69***	-0.22	
	(1.61)	(1.35)	(0.67)	(0.52)	(1.22)	(2.78)	(0.34)	
Parent Gender x Child Gender								
Female x Female	2.06	1.37	0.92	0.89	1.60	1.69	0.17	
	(2.01)	(1.80)	(0.74)	(0.67)	(1.42)	(3.63)	(0.40)	
1> child families (all girls vs. all boys)								
Parent Gender (female = 1)	18.21***	-5.61***	5.18***	6.80***	1.09	-8.77**	0.45	7,248
	(1.79)	(1.36)	(0.86)	(0.89)	(1.20)	(3.04)	(0.45)	
Child gender (female = 1)	-1.64	-4.63***	0.53	-1.10	1.49	-2.52	0.52	
	(1.55)	(1.36)	(0.71)	(0.72)	(1.29)	(3.15)	(0.50)	
Child age (ref.=0- 4 years)								
5 - 12 years	-30.73***	-20.00***	4.17***	1.83**	-7.12***	-0.97	0.64	
	(1.52)	(1.21)	(0.78)	(0.65)	(1.02)	(2.59)	(0.44)	
13 - 17 years	-46.05***	-23.69***	-5.12***	-1.23	-10.28***	-0.32	-0.17	
	(1.99)	(1.39)	(1.00)	(1.14)	(1.65)	(4.19)	(0.66)	
Parent Gender x Child gender								
Female x Female	5.48*	7.19***	-2.41*	0.39	0.04	11.01**	-0.17	
	(2.47)	(1.93)	(1.15)	(1.11)	(1.72)	(4.26)	(0.68)	