

## The effect of family structure on parents' child care time in the United States and the United Kingdom

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### **Abstract:**

We use time-diary data from the 2003 and 2004 American Time Use Surveys and the 2000 United Kingdom Time Use Study to estimate the effect of family structure on the time mothers and fathers spend on primary and passive child care and on market work, using a system of correlated Tobit equations. Our results indicate that estimates are sensitive to the inclusion of a common household factor that controls for selection into family type. Estimates from the selection-controlled models indicate that single parents in both countries spend more time in child care than married or cohabiting parents, perhaps in part to compensate for the missing parent, but that there is no difference in the time allocation of married and cohabiting parents. There are substantial cross-country differences, however, as single parents in the U.S. work more than other parents and single parents in the U.K. work less. **Keywords** Time use - Child care - Family structure

### **Article:**

#### *1 Introduction*

The time that parents devote to caring for their children is an important investment that contributes to children's safety, health, and development. Yet, recent trends in family structure and in women's employment put parental child care time at risk. The rise in single-parent households means that fewer families can rely on the services of two adults to care for children. The trend towards cohabitation and away from marriage may also affect parental child care time if cohabiting relationships are less stable or otherwise different from marital relationships. In addition, women's increasing labor force attachment and the trend towards dual-career households may further reduce the time parents have for child care. Thus, examination of the effect that family structure has on parental child care and market time is timely and warranted.

We examine these relationships using time-diary data from the 2003 and 2004 American Time Use Surveys (ATUS) and the 2000 United Kingdom Time Use Study (UKTUS). Two notable features of our study are our comparisons between the U.S. and the U.K. and our econometric approach, which accounts for both causal and selective associations between family structure and time use.

An analysis of the U.S. and U.K. is beneficial for several reasons. First, among OECD nations, the U.S. and the U.K. are relatively close in terms of their levels of economic development, income distributions (Smeeding et al. [2001](#)), social structures, and legal institutions (particularly with respect to family structure, Barlow and Probert [2004](#)). These similarities facilitate the comparison of the countries' other differences (Gershuny and Robinson [1988](#) and Seltzer [2004](#)). Second, two key differences between the U.S. and the U.K. involve characteristics likely related to parents' child care time: parents' living arrangements and mothers' labor supply. Parents in the U.S. are more likely to be single and less likely to cohabit than parents in the U.K.<sup>1</sup> In addition, while the labor force participation rates for mothers are similar between the countries, employed women in the U.S. are much more likely to have full-time jobs than employed women in the U.K.<sup>2</sup> Third, each country's

public assistance policies have encouraged substantially different behavior for single parents, with U.S. policy promoting a decidedly stronger work orientation than U.K. policy (see, e.g., Walker and Wiseman 2003).<sup>3</sup> While we do not directly examine specific program features, we can look for cross-country differences in child care and market work time between single and partnered parents to determine whether actual behavior is consistent with the orientations and objectives of the two welfare systems.

Previous work has analyzed the relation between family structure and parental child care time (for example, Kalenkoski et al. 2005) but not considered the possibility of a selection effect associated with family structure. While family structure as measured by parents' living arrangements and the number and age distribution of children is predetermined as of the diary day, there may be unobserved characteristics that affect both family structure decisions and parents' time use decisions. For example, if individuals who prefer larger families also prefer spending time with children, the number of children may appear to have a larger impact on child care time than it actually does. The impact of marriage on child care time would also be biased if individuals with more altruistic preferences were more likely both to marry and to spend time with children and these preferences were ignored. To account for these selection effects, we estimate our parental time-use models together with family structure models and include statistical controls in each of these specifications for common unobserved factors.

A major finding in our study is that single parents in both countries spend more time in child care than married or cohabiting parents. Another key finding is that after controlling for observable differences in family structure and background, we find no significant difference between the time allocation of married and cohabiting parents in either country. In addition, consistent with the differences in public assistance policies in the U.K. and the U.S., we find that single parents work more than other parents in the U.S. but less than other parents in the U.K.

## *2 The link between family structure and time use*

Our empirical analyses consider both causal and selection mechanisms for the possible associations between family structure and parents' time use. Economic and sociological theories offer numerous reasons why we might expect to find causal links. We briefly review those theories and then discuss alternative explanations based on selection.

The primary conceptual framework for economic analyses of people's time use is Becker's (1965) household production model. In this model, people derive utility or satisfaction from commodities, such as their children's health and well-being, which can be produced using inputs of goods and services and inputs of household members' time. The model assumes that parents rationally choose the amounts of time that they spend in different activities, including child care and market labor, and the amounts of goods that they purchase in order to maximize utility subject to the constraints on their budgets and total availability of time.

Within this framework, family structure could affect parental child care time through a number of mechanisms. First, family structure affects resources and needs. The presence of a second, able-bodied adult in a household through marriage or cohabitation increases the household's available time and money resources, which could increase the amount of parental child care, the purchase of care services, or both. Grossbard-Shectman (1984) suggests that an extra adult also changes the relative value of household and market labor, raising the effective "wage" of household occupations and possibly increasing child care time. Adding a child increases the household's need for care and so may increase child care time. Second, family structure affects the opportunities for specialization. With multiple household members, one person can focus on market work while another focuses on child care (Becker 1985). Marriages, by virtue of being more durable and stable, are likely to promote higher levels of specialization than other relationships (Willis and Michael 1994).

Sociologists have looked at many of these same issues, especially in the context of housework (see the overviews by Bianchi et al. 2000 and South and Spitze 1994). Two sociological explanations—theories about time availability and relative resources—intersect with the economic hypotheses. Time availability theories

predict that people will contribute more to household tasks such as child care to the extent that their time is not required in other activities such as market work. Resource theories recognize that higher earnings and greater wealth allow people to purchase services that substitute for their own time. Resource theories also consider how differences in earnings and outside opportunities affect bargaining power and hence, the division of labor in the household. Two other sociological explanations—socialization and gender theory—do not fit as neatly in the economic framework. These theories consider how individuals come to internalize certain values or roles and how societies and institutions—including the institution of the family—reinforce those roles and possibly construct gender itself (Berk [1985](#); West and Zimmerman [1987](#); Ferree [1990](#)).

While economic and sociological theories each predict that family structure affects the time that parents allocate to child care and market work, we must recognize that family structure is behaviorally determined. There is a rich research literature that examines union formation and childbearing (see, e.g., Weiss [1997](#) and Hotz et al. [1997](#)). Just as we would expect observed and unobserved characteristics to influence people's time use, we would also expect them to influence family structure, leading to possible selection biases in the measured associations between time use and family structure. People who are more likely to marry or to have large families might also have a stronger disposition towards caregiving that may be due to altruistic preferences, conservative attitudes about gender and family roles, or differential household abilities. Addressing these selection concerns has been a fundamental theme in analyses of the effects of family structure on children's well-being and other outcomes (Ribar 2003, unpublished manuscript).

### *3 Previous research and empirical considerations*

Empirical analysis of market work and child care time requires data on time use. While some surveys that ask respondents to estimate the usual time spent on various activities have been used for this purpose (Muller [1995](#); Aldous et al. [1998](#)), there are substantial concerns about the accuracy of these data (Robinson [1985](#), [2002](#); Juster and Stafford [1985](#), [1991](#)). Time diary data that include information on primary and secondary activities, as well as on the identities of those present during each activity, are generally believed to be more accurate. Time diaries are especially important for measuring child care activities, which can range from physical care to loose monitoring. Empirical research has tended to distinguish between two types of child care activities: primary care, which involves direct interactions with or activities on behalf of a child, and passive care, which encompasses all other activities performed with a child present.<sup>4</sup> Each type of care is important in its own right. For instance, Bianchi ([2000](#)) has argued that primary child care time is an important measure of quality time spent with children; interestingly, however, she has found that maternal provision of both types of care has actually increased over time in the U.S. Nock and Kingston ([1988](#)) have reported stronger evidence of employment and child care quality trade-offs.

Several studies have employed U.S. time-diary data from the 1975–1981 Time Use Longitudinal Panel to examine child care time within married households. Kooreman and Kapteyn ([1987](#)) found that higher wages for fathers increased care provided by mothers, that mothers' provision of care did not respond to changes in their own wages, and that fathers' provision of care did not respond to changes in either's wages. Using the same data, Nock and Kingston ([1988](#)) regressed total time with children and time spent in particular care activities against measures of mothers' and fathers' work schedules, reporting that mothers' employment, especially employment during after-school hours, decreased their time spent with children. However, the effects on children were partially mitigated because the reductions were concentrated in secondary activities with children. They found little evidence that fathers compensated for mothers' employment by increasing their direct care activities or substituting among activities.

Bryant and Zick ([1996](#)) used a larger U.S. sample of two-parent, two-child families and found that the hours that mothers spent in market labor reduced the time that they devoted to child care, though this effect appeared mainly for older children. Like Nock and Kingston, they found little evidence that fathers compensated with more child care time of their own. Hallberg and Klevmarken ([2003](#)) used Swedish data on dual-earner, married and cohabiting couples to investigate the determinants of child care. They found that the time a spouse spends

in child care has a positive impact on the time the other parent spent in child care, that neither own nor spousal wages affect child care time, that own hours worked have a negative effect on own time spent in child care, and that spousal hours worked have a positive effect.

These time-diary studies all focused on couple households and when they included both married and cohabiting couples they made no distinction between the two. There are only a few studies that examine single-parent households. For example, Sandberg and Hofferth (2001) examined time spent in the presence of children and found that single parents in the U.S. spend substantially less time with children than other parents. By contrast, Kimmel and Connelly (Forthcoming 2007) found that mothers living with a marriage partner spend less time in child care than other mothers, both cohabiting and single. Kalenkoski et al. (2005) in a joint analysis of primary and secondary child care time and market work time in Britain distinguished between married, cohabiting, and single parents of both genders. They found that married and cohabiting parents allocate their time similarly, while single parents spend more time on child care and less time in market work than other parents.

All of these previous studies of caregiving have assumed family structure to be exogenously determined. Yet, as discussed above, it is relatively straightforward to postulate both causal and selective associations between family structure and time use. Thus, an analysis that accounts for the endogeneity of family structure is warranted.

Time use is also likely to differ considerably between weekdays and weekend days. Some researchers have included dummy variables in their time use models to control for average differences across days (e.g., Kalenkoski et al. 2005). However, more general controls may be needed owing to differences in employment opportunities, paid care availability, and school schedules by type of day. Therefore we model time use on weekday and weekend days separately to allow for differences in the marginal effects of each explanatory variable.

## 4 Data

The specific data sets used for our empirical analyses are the American Time Use Survey and the United Kingdom Time Use Survey.

### 4.1 American Time Use Survey

The ATUS is an ongoing national survey that has been conducted monthly by the U.S. Bureau of the Census for the U.S. Bureau of Labor Statistics since January 2003. For this study we use data from 2003 and 2004. Subjects for the ATUS are drawn from households in their last month of participation in the Current Population Survey (CPS). One person aged 15 or over is randomly selected to participate.

For the time-use component of the survey, the respondent completes a diary describing what he or she was doing during the preceding 24 h. These responses are later coded into standardized activities. Information on the duration, location, and people present is collected for each recorded activity. Respondents also complete a questionnaire that is similar to the monthly CPS questionnaire. Interviews are conducted every month of the year and every day of the week, with a higher proportion of interviews occurring on weekends to achieve an approximate balance between weekday and weekend reports.

There were a total of 20,720 respondents to the ATUS in 2003 and 13,973 in 2004. We pool these two samples but, because our focus is on parental child care, we exclude from our estimation sample the relatively small number of persons living in households with multiple families, households with same-sex couples, households where grandparents are the chief caregivers, households with roommates or boarders under the age of 18, and households where a child's caregiver is unable to be determined due to the presence of other related or unrelated individuals in the household. As we are also interested in work issues, we exclude respondents who were enrolled in school full time and those who were themselves or whose partners were at retirement age (age 62 or

above). Finally, we delete observations with allocated data or with inconsistent information between the CPS and ATUS interviews. These exclusions reduce our sample to 21,023 individuals, each living in a separate household. This sample is used to estimate family structure equations for parents' living arrangements and numbers of children in different age ranges. In our analyses of child care and market work, we further reduce the sample to 10,979 adults who were either parents of co-resident children under the age of 18 or the spouses or unmarried partners of such parents.

## 4.2 United Kingdom Time Use Survey

The UKTUS is a national household-based study with multiple questionnaire and time-diary components that was conducted in 2000–2001. Selected household heads or their partners filled out household questionnaires providing information on household composition. Every person aged 8 and older identified as a household member was then provided a questionnaire asking about his or her education, employment status, earnings, and other demographic information, as well as two time-diary questionnaires for pre-selected days. Filled out in the respondents' own words, the time diaries were later coded to identify standardized primary and secondary time activities, the location of the activities, and categorical responses regarding others present during the activities for every 10-min interval during two 24 h periods: one weekday and one weekend day. In sum, the UKTUS obtained 20,981 time diaries from 11,664 people living in 6,414 households.

For our analysis sample we employ selection criteria that are as similar as possible to those used for the ATUS. Households with missing intrahousehold relationship data, people not reporting age or education, people younger than age 18, people who were themselves or were partnered with someone at or above retirement age (60 for women and 65 for men), and people who were still in school are dropped from the sample. Households living in Northern Ireland are also excluded as information regarding the local unemployment rate and urbanicity is unavailable for these households. Finally, households with multiple families and households in which the children's caregivers cannot be identified are excluded.<sup>5</sup> The resulting sample, which is used to estimate the family structure equations, contains observations for 4,607 households. Only one person per household is selected for the estimation of the family structure equations because family structure is a joint rather than an individual decision. The subsample used to estimate the time use equations consists of people living with their own or their partner's children under the age of 18; it includes 4,998 diaries for 2,642 adults living in 1,597 households.<sup>6</sup> The key differences between the structures of the U.S. and U.K. data sets are the availability of multiple diaries per respondent and diaries for both partners in the household from the U.K.

## 4.3 Time use variables

We focus on three activities: primary child care, passive child care, and market work. Primary child care activities include physical care, reading, playing (including sports), talking/listening, helping/teaching, education and health-related activities, and travel related to caring for or helping household children. We construct our primary child care measure by summing up all minutes spent in these activities.

Our measure of passive care is constructed by summing up all non-primary child care time spent with children aged 14 and under, except for time spent sleeping, working, or in personal care activities.<sup>7</sup> The activity restrictions are necessary because the ATUS does not record who is present for these activities. Our market work measure includes time spent at a job, time spent in work-related activities such as socializing that is part of a job, and time spent on work-related travel that is not commuting time. The ATUS measure also includes time spent in other income-generating activities and time spent in security procedures related to work. Time spent searching or interviewing for jobs is not included in the work measure for either sample.

We analyze time use separately by gender and by weekday/weekend status, treating holidays like weekend days. Key conditioning variables are the respondent's living arrangement (married, cohabiting, or single) and the numbers of household children in different age ranges (0–3, 4–6, 7–11, and 12–17). Other common controls include the number of other adults in the household, seasonal dummies, the age and education of the caregiver,

and the local unemployment rate. Wage and household income are also likely related to time use. However these data are both potentially endogenously determined and good instruments with which to separately identify them are lacking.<sup>8</sup> Thus, we estimate a reduced form specification that includes factors commonly used to model wages and income. In addition, the models for the U.S. include dummy variables for race and ethnicity, the region of residence, rural residence, and the year of the report, while the models for the U.K. include dummy variables for residence in London or in a rural area.

#### 4.4 Descriptive statistics

Table 1 reports the average daily minutes spent on primary child care, passive child care, and market work by country, living arrangement (single, cohabiting, and married), and type of day (weekday and weekend/holiday). Panel A reports these statistics for women, while Panel B reports these statistics for men.

**Table 1** Average minutes spent on child care and market work by country, living arrangement, and day of week

		United States			United Kingdom		
		Living arrangement			Living arrangement		
		Single	Cohabiting	Married	Single	Cohabiting	Married
Panel A: Women							
Weekday	Primary child care minutes	105	122	139	113	130	104
	Passive child care minutes	182	228	218	295	311	271
	Market work minutes	296	222	233	148	184	205
	Number of observations	820	114	2238	297	146	977
Weekend/holiday	Primary child care minutes	70	98	101	72	113	79
	Passive child care minutes	329	326	361	363	395	374
	Market work minutes	78	46	53	45	48	57
	Number of observations	835	83	2269	299	154	988
Panel B: Men							
Weekday	Primary child care minutes	69	37	60	51	38	38
	Passive child care minutes	124	164	128	254	158	160
	Market work minutes	378	353	448	248	399	418
	Number of observations	176	54	2012	30	137	903
Weekend/holiday	Primary child care minutes	36	62	68	19	59	46
	Passive child care minutes	232	280	325	304	304	320
	Market work minutes	85	125	109	120	133	105
	Number of observations	181	74	2123	31	146	890

The numbers of diaries for each gender-day combination are substantial for both samples, exceeding 1,000 for each combination. Within our U.S. sample, about 71% of the women were married, 3% were cohabiting, and 26% were single. The corresponding numbers for men were roughly 90%, 3%, and 8%. By contrast, in the U.K. sample, roughly four times as many parents were cohabiting (11% of the women and 13% of the men). This is roughly as expected given cross-country differences in living arrangements.

Many of the sample averages for time use are also as expected. Women in both countries spend more time on child care and less time on market work than men. Also, time spent on market work is substantially greater on weekdays than on weekends or holidays while the opposite is true for passive child care. However, women spend less time on primary child care on weekends/holidays than on weekdays.

Averages by living arrangement for women, however, differ by country. Cohabiting women in the U.K. average more time on both primary and passive child care than either married or single women on both weekends and weekdays, while in the U.S. married women usually have the highest average child care time. Women's work time also shows a distinctly different pattern by country. Single women in the U.S. report the highest average work time on both weekends/holidays and weekdays, but married women report the highest average in the U.K.

The pattern of time use by living arrangement is more uniform between countries for men. More often than not it is single men in both countries who average more time on child care on weekdays and married men who average more time on child care on weekends. In addition, married men in both countries have the highest average work time on weekdays and cohabiting men have the highest average work time on weekends/holidays.

However, these are simple descriptive statistics. Due to the high variance in reported time use, none of these differences is statistically significant. Furthermore, sample characteristics indicate that, of all household types, cohabiting households in the U.K. are most likely to have preschool-aged children while in the U.S. it is married households that are most likely to have preschool-aged children. Given the importance of young children in determining child care time, this cross-country difference in the distribution of preschool-aged children may help explain the observed cross-country differences in child care time by living arrangement. Thus it is important to conduct multivariate analysis to determine whether living arrangements or other variables are driving the observed differences. Descriptive statistics for the other variables used in the analysis are reported in Appendix A.

## 5 Econometric specification

In our multivariate analyses we estimate systems of censored regression (Tobit) models of mothers' and fathers' daily allocations of time to primary child care, passive child care, and market work. Our analyses focus on the associations of time use with parents' living arrangements and the number and ages of children. We consider the possibility that living arrangements and the number and ages of children may be selectively determined and model these outcomes together with time use in a Full-Information Maximum Likelihood specification. Below, we describe the time use and family structure components of our system.

### 5.1 Time use specifications

Our models include 12 distinct specifications of time use that are particular to the type of activity, the gender of the person performing it, and the type of day on which it occurs. For a given family, let  $P_{g,d}$ ,  $S_{g,d}$ , and  $H_{g,d}$  represent the daily minutes that parent or partner  $g$  on day  $d$  reports performing primary child care, passive child care, and market work activities, respectively (henceforth we refer to both parents and partners as "parents"). Parents are indexed by their gender ( $g = f, m$ ), and days are indexed by whether they are regular weekdays ( $d = 1$ ) or weekends or holidays ( $d = 2$ ).

To address the non-negativity constraints on the uses of time, we assume that the actual reports are related to a set of continuous latent variables,  $P_{g,d}^*$ ,  $S_{g,d}^*$ , and  $H_{g,d}^*$ , such that each of the reports equals the corresponding latent variable if the latent variable is positive and equals zero otherwise (e.g.,  $P_{g,d} = P_{g,d}^*$  if  $P_{g,d}^* > 0$  and  $P_{g,d} = 0$  otherwise).

Let  $L$  be a vector of measures describing the parent's living arrangements; let  $K$  be a vector describing the number and age distribution of the children; let  $X_{g,d}$  be a vector of other measured characteristics; and let  $e_{P,g,d}$ ,  $e_{S,g,d}$ , and  $e_{H,g,d}$  be random variables that represent unmeasured activity and person- and day-specific characteristics. We assume that the latent time spent in each activity is a linear function of the observed and unobserved variables such that

$$P_{g,d}^* = \alpha'_{P,g,d}L + \beta'_{P,g,d}K + \gamma'_{P,g,d}X_{g,d} + \epsilon_{P,g,d} \quad (1)$$

$$S_{g,d}^* = \alpha'_{S,g,d}L + \beta'_{S,g,d}K + \gamma'_{S,g,d}X_{g,d} + \epsilon_{S,g,d} \quad (2)$$

$$H_{g,d}^* = \alpha'_{H,g,d} L + \beta'_{H,g,d} K + \gamma'_{H,g,d} X_{g,d} + e_{H,g,d}. \quad (3)$$

These specifications, along with the specification of how actual minutes are reported conditional on the latent variables, describe a set of censored regression models. For each daily diary report for each parent in our sample, we jointly estimate all three models, allowing for correlations among the  $e_{P,g,d}$ ,  $e_{S,g,d}$ , and  $e_{H,g,d}$  terms.

## 5.2 Family structure models

Along with the person-level time-use models, we jointly estimate household-level discrete-choice models of the determinants of families' living arrangements (elements of  $L$ ) and of the number and age distribution of their children (elements of  $K$ ). We examine three types of living arrangements: being single, cohabiting, and being married. Let  $V_S^*$ ,  $V_C^*$ , and  $V_M^*$  denote the indirect utilities associated with each of these outcomes. For convenience, we normalize  $V_S^* = 0$ .

Let each of the remaining indirect utilities be a linear function of observed family-specific variables,  $Z$ , and unobserved variables,  $u_C$ , and  $u_M$ , such that

$$V_C^* = \delta'_C Z + u_C \quad \text{and} \quad V_M^* = \delta'_M Z + u_M \quad (4)$$

where  $\delta_C$  and  $\delta_M$  are vectors of coefficients. We assume that households adopt the living arrangement with the highest indirect utility, and estimate the model using a multinomial logit.

For the number and age distribution of children, we assume that families have a latent, desired number of children in each of several age categories, which we denote  $K_j^*$  where  $j$  ( $= 1, 4$ ) indexes the age categories 0–3, 4–6, 7–11, and 12–17. We assume that each  $K_j^*$  is a linear function of observed characteristics,  $Z$ , and unobserved characteristics,  $w_j$ , such that

$$K_j^* = \psi'_j Z + w_j. \quad (5)$$

We estimate ordered probit models of the number of children in each age group.

## 5.3 Specification of the error terms

To address selectivity that might arise from unobserved and omitted variables, we assume that the unobserved terms in the time use and family structure models are composites consisting of a common family-specific factor,  $\mu$ , and various outcome-specific components as follows

$$e_{a,g,d} = \lambda_{a,g,d} \mu + \varepsilon_{a,g,d} \quad \text{for } a = P, S, H; \quad g = f, m, \quad \text{and } d = 1, 2 \quad (6a)$$

$$u_b = \lambda_b \mu + v_b \quad \text{for } b = C, M \quad (6b)$$

$$w_j = \lambda_j \mu + \eta_j \quad \text{for } j = 1, 4 \quad (6c)$$

where the  $\varepsilon$ ,  $v$ , and  $\eta$  terms are the outcome-specific errors and the  $\lambda$  terms are coefficients, or factor loadings, on the family-specific error. The presence of the common family-specific factor in the composite errors leads to correlations among the errors. We specify  $\mu$  as having a discrete distribution and estimate the points of support and associated probabilities for this distribution. Mroz (1999) has shown that this type of factor-analytic error structure is an effective way to address problems associated with selectivity.

For each parent on each day we allow for additional correlations in the unobserved determinants of their activities by allowing the activity-specific error components to be jointly normally distributed with an unrestricted covariance structure



	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	U.S.		U.K.		U.S.		U.K.		U.S.		U.K.	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
	-11.3	-13.1	-10.9	-7.3	-10.3	-51.6	-40.0	-41.3	-80.8	-19.7	47.0	19.8
Children 0-3	88.0 ***	86.8 ***	85.4 ***	82.2 ***	71.0 ***	0.9	91.4 ***	-12.1	-158.5 ***	-79.4 ***	-206.6 ***	-173.7 ***
	(4.2)	(4.5)	(7.7)	(8.6)	(6.9)	(9.4)	(16.5)	(27.3)	(16.1)	(24.9)	(34.7)	(66.4)
	73.3	58.5	61.0	45.8	54.5	0.6	55.3	-6.7	-82.3	-14.2	-92.3	-25.4
Children 4-6	43.6 ***	34.6 ***	36.7 ***	18.3 **	40.0 ***	-5.1	8.4	-2.5	-104.7 ***	-5.4	-89.6 ***	-48.7
	(4.1)	(5.1)	(7.7)	(8.8)	(6.9)	(9.7)	(15.3)	(25.5)	(15.3)	(26.4)	(29.9)	(62.7)
	34.6	21.2	24.2	9.0	30.0	-3.7	4.9	-1.3	-57.0	-1.0	-45.3	-8.4
Children 7-11	23.1 ***	2.4	7.7	-3.3	45.8 ***	23.1 ***	41.2 ***	4.5	-85.7 ***	-25.4	-65.5 ***	-18.9
	(3.5)	(3.9)	(6.1)	(6.5)	(5.4)	(7.2)	(10.9)	(17.5)	(12.1)	(18.2)	(21.5)	(41.1)
	17.8	1.4	4.8	-1.5	34.5	16.9	24.3	2.5	-47.4	-4.9	-34.0	-3.4
Children 12-17	1.6	-13.0 ***	-14.6 **	-19.6 ***	17.0 ***	-2.8	11.4	-10.8	-33.9 ***	22.0	-22.0	12.0
	(3.9)	(4.2)	(6.3)	(6.3)	(6.0)	(7.9)	(11.1)	(16.9)	(12.5)	(20.0)	(21.2)	(39.5)
	1.2	-7.2	-8.8	-8.8	12.5	-2.1	6.7	-6.0	-19.5	4.6	-11.9	2.2
<i>Men</i>												
Cohabiting	-98.1 ***	-7.6	-57.1 *	17.4	-31.6	-33.9	-160.3 ***	-113.3	-49.6	71.1	190.8 **	44.2
	(21.3)	(28.0)	(29.3)	(42.2)	(26.0)	(44.7)	(61.1)	(89.3)	(43.9)	(82.2)	(89.0)	(193.3)
	-52.0	-3.6	-26.2	5.8	-20.4	-23.1	-90.4	-61.6	-42.1	22.4	146.0	13.2
Married	-61.4 ***	-38.6 **	-41.5	19.2	-68.0 ***	-35.6	-162.6 ***	-105.0	9.6	26.8	226.0 ***	-1.6
	(11.2)	(18.8)	(27.3)	(41.0)	(16.8)	(27.3)	(57.8)	(84.4)	(27.5)	(54.3)	(81.9)	(181.2)
	-36.1	-16.8	-20.2	6.4	-42.0	-24.2	-91.5	-57.3	8.4	8.0	176.1	-0.5
Children 0-3	33.9 ***	75.2 ***	45.0 ***	49.7 ***	8.7	23.0 *	24.3	-40.7	-28.6 **	-51.7 **	-60.5 **	-1.6
	(5.5)	(7.1)	(8.0)	(9.7)	(8.2)	(12.7)	(17.5)	(30.0)	(13.6)	(24.5)	(30.2)	(68.4)
	18.8	36.3	22.1	21.3	5.0	15.6	12.3	-20.8	-24.6	-14.9	-50.6	-0.5
Children 4-6	26.2 ***	38.0 ***	26.3 ***	13.0	12.7	5.4	14.4	4.6	-3.6	10.5	-35.4	58.4
	(5.3)	(6.9)	(8.7)	(9.3)	(7.9)	(12.9)	(17.6)	(28.5)	(13.7)	(23.8)	(30.0)	(62.0)
	14.3	16.9	12.0	4.9	7.4	3.6	7.2	2.4	-3.1	3.3	-29.9	17.8
Children 7-11	9.1 **	13.4 **	9.7	-4.7	17.3 ***	45.2 ***	25.2 **	21.3	-28.4 ***	-22.7	-44.0 **	-42.8

	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	U.S.		U.K.		U.S.		U.K.		U.S.		U.K.	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
	(4.2)	(5.6)	(6.1)	(7.0)	(6.0)	(9.5)	(12.7)	(19.4)	(10.3)	(18.3)	(21.3)	(52.7)
	<i>4.7</i>	<i>5.6</i>	<i>4.1</i>	<i>-1.7</i>	<i>10.1</i>	<i>31.1</i>	<i>12.7</i>	<i>11.2</i>	<i>-24.5</i>	<i>-6.8</i>	<i>-37.1</i>	<i>-11.9</i>
Children 12–17	-2.8	-18.6***	-5.7	-25.2***	-4.0	4.4	5.3	-23.6	7.6	-14.5	-61.1***	48.7
	(4.3)	(6.0)	(6.5)	(8.0)	(6.9)	(10.1)	(12.6)	(19.8)	(10.8)	(18.6)	(21.4)	(49.2)
	<i>-1.4</i>	<i>-7.1</i>	<i>-2.3</i>	<i>-8.2</i>	<i>-2.3</i>	<i>3.0</i>	<i>2.7</i>	<i>-12.2</i>	<i>6.6</i>	<i>-4.3</i>	<i>-51.1</i>	<i>14.7</i>

Notes: Table reports selected coefficient estimates, asymptotic standard errors (in parentheses), and marginal effects (italicized) from correlated Tobit models of time use. As described in the text, the models are estimated jointly with discrete-choice models of family structure. Estimates for the remaining time use coefficients and for the family structure models are reported in Appendices B and C

\*Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

**Table 3** Effect of family structure on time-use not controlling for selection into family type

	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	U.S.		U.K.		U.S.		U.K.		U.S.		U.K.	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
<i>Women</i>												
Cohabiting	-10.7	14.4	-20.0	2.4	16.5	-38.6	-41.2	-14.2	-94.1**	-97.5	116.2**	57.1
	(13.6)	(14.6)	(13.6)	(15.1)	(18.6)	(33.3)	(34.5)	(53.1)	(43.2)	(83.1)	(47.1)	(93.8)
	<i>-8.3</i>	<i>9.5</i>	<i>-14.9</i>	<i>1.5</i>	<i>13.1</i>	<i>-32.5</i>	<i>-33.8</i>	<i>-11.3</i>	<i>-61.7</i>	<i>-20.4</i>	<i>61.4</i>	<i>8.4</i>
Married	0.2	-3.3	-37.5	20.9	20.7**	23.1*	-126.6***	-77.2	-93.6***	-76.5***	229.3***	9.3
	(5.9)	(6.9)	(24.4)	(37.5)	(9.1)	(12.0)	(43.8)	(75.7)	(19.7)	(29.5)	(79.3)	(174.2)
	<i>0.2</i>	<i>-2.1</i>	<i>-7.1</i>	<i>-2.9</i>	<i>16.5</i>	<i>19.9</i>	<i>-25.6</i>	<i>8.7</i>	<i>-61.4</i>	<i>-16.5</i>	<i>47.7</i>	<i>18.7</i>
Children 0–3	96.5***	99.4***	53.3***	63.3***	91.4***	58.4***	82.9***	99.6***	-139.7***	-70.8***	-54.4*	1.6
	(4.0)	(4.5)	(7.7)	(9.1)	(6.8)	(10.7)	(19.1)	(35.9)	(16.1)	(25.2)	(28.5)	(64.8)
	<i>84.4</i>	<i>74.0</i>	<i>86.6</i>	<i>77.5</i>	<i>78.5</i>	<i>51.7</i>	<i>160.8</i>	<i>127.3</i>	<i>-79.5</i>	<i>-13.2</i>	<i>-89.1</i>	<i>-23.3</i>
Children 4–6	52.0***	45.9***	32.4***	23.0***	60.1***	48.9***	55.0***	112.5***	-83.0***	7.0	-32.2	54.2
	(3.9)	(5.1)	(8.4)	(8.9)	(6.9)	(11.3)	(19.3)	(35.3)	(15.2)	(26.4)	(28.2)	(60.1)
	<i>43.8</i>	<i>31.5</i>	<i>40.4</i>	<i>23.7</i>	<i>50.7</i>	<i>43.2</i>	<i>67.4</i>	<i>114.2</i>	<i>-49.5</i>	<i>1.5</i>	<i>-45.1</i>	<i>-8.0</i>
Children 7–11	31.3***	13.9***	16.5***	5.9	65.1***	76.8***	65.6***	121.9***	-66.4***	-14.8	-39.5**	-43.3
	(3.3)	(3.8)	(5.8)	(6.5)	(5.2)	(7.7)	(13.2)	(23.8)	(11.8)	(17.9)	(19.7)	(49.4)

	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	U.S.		U.K.		U.S.		U.K.		U.S.		U.K.	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
	25.8	9.0	17.0	7.9	55.0	68.4	86.3	95.6	-40.1	-3.0	-33.5	-3.1
Children 12–17	1.3	-13.5***	-4.9	-25.2***	16.8***	-2.9	7.3	-20.9	-35.5***	27.0	-60.9***	46.4
	(3.8)	(4.1)	(6.2)	(7.7)	(6.0)	(8.7)	(13.5)	(24.5)	(12.6)	(20.1)	(20.3)	(48.4)
	<i>1.0</i>	<i>-8.4</i>	<i>-10.3</i>	<i>-11.5</i>	<i>13.8</i>	<i>-2.4</i>	<i>8.5</i>	<i>-7.1</i>	<i>-21.9</i>	<i>5.7</i>	<i>-12.1</i>	<i>2.9</i>
<i>Men</i>												
Cohabiting	-86.6**	14.8	-57.2**	13.8	0.5	53.6	-151.8***	-119.8	-13.1	103.8	191.2**	50.7
	(20.8)	(26.5)	(26.4)	(38.7)	(24.5)	(41.8)	(48.8)	(84.0)	(44.7)	(79.0)	(86.0)	(185.3)
	<i>-48.0</i>	<i>7.3</i>	<i>-30.4</i>	<i>6.1</i>	<i>0.4</i>	<i>40.1</i>	<i>-116.9</i>	<i>-91.7</i>	<i>-11.6</i>	<i>33.4</i>	<i>147.7</i>	<i>14.8</i>
Married	-41.1***	-4.0	-37.5	20.9	-13.8	107.5***	-126.6***	-77.2	86.5***	83.9*	229.3***	9.3
	(10.5)	(16.7)	(24.4)	(37.5)	(13.8)	(23.0)	(43.8)	(75.7)	(25.3)	(47.7)	(79.3)	(174.2)
	<i>-25.8</i>	<i>-1.9</i>	<i>-21.4</i>	<i>9.5</i>	<i>-9.8</i>	<i>83.2</i>	<i>-99.8</i>	<i>-60.4</i>	<i>78.4</i>	<i>26.3</i>	<i>180.5</i>	<i>2.6</i>
Children 0–3	39.5***	87.2***	53.3***	63.3***	23.1***	73.4***	82.9***	99.6***	-5.2	-29.4	-54.4*	1.6
	(5.4)	(6.8)	(7.7)	(9.1)	(8.0)	(12.8)	(19.1)	(35.9)	(13.6)	(24.4)	(28.5)	(64.8)
	<i>24.9</i>	<i>49.3</i>	<i>31.6</i>	<i>37.1</i>	<i>16.5</i>	<i>61.8</i>	<i>63.0</i>	<i>78.4</i>	<i>-4.9</i>	<i>-9.7</i>	<i>-46.1</i>	<i>0.5</i>
Children 4–6	32.8***	48.4***	32.4***	23.0***	30.3***	48.7***	55.0***	112.5***	24.3*	29.9	-32.2	54.2
	(5.3)	(6.8)	(8.4)	(8.9)	(7.8)	(13.3)	(19.3)	(35.3)	(14.0)	(23.7)	(28.2)	(60.1)
	<i>20.4</i>	<i>25.3</i>	<i>17.9</i>	<i>12.1</i>	<i>21.9</i>	<i>40.5</i>	<i>40.8</i>	<i>89.1</i>	<i>22.6</i>	<i>10.5</i>	<i>-27.5</i>	<i>16.4</i>
Children 7–11	13.9***	22.6***	16.5***	5.9	29.3***	85.5***	65.6***	121.9***	-6.8	-4.1	-39.5**	-43.3
	(4.1)	(5.5)	(5.8)	(6.5)	(6.0)	(9.2)	(13.2)	(23.8)	(10.2)	(17.9)	(19.7)	(49.4)
	<i>8.3</i>	<i>11.1</i>	<i>8.6</i>	<i>2.9</i>	<i>21.2</i>	<i>72.3</i>	<i>49.1</i>	<i>96.9</i>	<i>-6.3</i>	<i>-1.4</i>	<i>-33.7</i>	<i>-11.9</i>
Children 12–17	-3.9	-19.6***	-4.9	-25.2***	-5.2	4.4	7.3	-20.9	4.7	-15.3	-60.9***	46.4
	(4.3)	(5.9)	(6.2)	(7.7)	(6.8)	(10.2)	(13.5)	(24.5)	(11.1)	(18.5)	(20.3)	(48.4)
	<i>-2.1</i>	<i>-8.8</i>	<i>-2.4</i>	<i>-11.1</i>	<i>-3.6</i>	<i>3.6</i>	<i>5.1</i>	<i>-15.5</i>	<i>4.3</i>	<i>-5.2</i>	<i>-51.5</i>	<i>13.9</i>

Notes: Table reports selected coefficient estimates, asymptotic standard errors (in parentheses), and marginal effects (italicized) from correlated Tobit models of time use. Estimates for the remaining time use coefficients are available upon request

\*Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

The unobserved factor,  $\mu$ , is modeled with a three-point discrete distribution in the ATUS sample and a five-point distribution for the UKTUS sample. Distributions with more points failed to converge, while distributions with fewer points were rejected. We find the common heterogeneity controls to be statistically significant for

both the U.S. and the U.K. The estimated factor loadings reported in Appendices B and C indicate that the unobserved common factor represents characteristics associated with a greater chance of marriage or cohabitation and with more children. While the factor loads positively into primary care activities and especially into passive care activities, it has almost no association with market work activities. Thus, estimates of market work time are not particularly sensitive to the controls for a common factor. For the U.K. sample, the estimated effects of parents' living arrangements on their primary and passive child care time also do not appear to be affected by the controls for unobserved factors. In the U.S., however, the estimated effects of parents' living arrangements on child care time are sensitive to these controls. Married men and women appear to spend significantly more time on passive child care than their single counterparts when no common factor is included, but significantly less time on passive child care when the common factor is included. Controlling for the unobserved common factor also appears to affect the estimates of the effects of the number and age distribution of children on parents' child care time in both countries, with especially noticeable differences in the estimated effects of these variables on time spent on passive child care. In conclusion, we find that it is important to control for selectivity when estimating the relation between family structure and time use.

Of particular concern in this analysis is how time use differs for married, cohabiting, and single parents. Joint hypothesis tests confirm that there are statistically significant differences in time use by family structure in both countries ( $p$  values in each country are 0.00). In general, however, our results indicate that these differences are between coupled and single parents, not between married and cohabiting parents. Joint hypothesis tests failed to uncover differences between the time use of married and cohabiting parents within either country ( $p$  value was 0.19 in the U.S. and 0.50 in the U.K.).<sup>11</sup> Thus, although on average marriages are more stable than cohabiting relationships, we do not find evidence that married couples specialize more. These results suggest that the trend away from marriage and towards cohabitation has not compromised the time parents spend in child care in either country. Further, these results provide some indirect evidence that time spent on child care may not be highly sensitive to the precise nature of the child–parent relation. There is evidence from the UKTUS that the fraction of household children who are biologically related to the partner but not the respondent is five times higher in cohabiting as compared to married couple households (17.7% vs. 3.3%). Yet we still see no difference in time allocations between married and cohabiting parents.<sup>12</sup>

While we find that married and cohabiting parents in each country spend their time in a like manner, there are significant cross-country differences in how coupled versus single parents spend their time. While coupled mothers in the U.S. spend less time in market work (67–81 min less on weekdays), coupled parents in the U.K. spend more time in market work (women around 47–59 min and men around 146–176 min more on weekdays) than their single counterparts. These profound differences in market work behavior likely reflect differences in social policy between the two countries. In particular, assistance policies in the U.K. at the time of the survey supported and even encouraged single parents to stay at home and care for their children while welfare-to-work requirements in the U.S. did just the opposite (Walker and Wiseman 2003). This different orientation is reflected in the substantially different employment rates for single mothers between countries. Sixty-nine percent of unmarried mothers in the U.S. were working in 2005 as compared with 55% of lone mothers in the U.K.<sup>13</sup>

While we lack sufficient household-specific information to precisely capture the impact that each welfare system has on parents' time use, we can examine whether the marginal impact of single parenthood on primary and passive child care time is substantially larger in the U.K. than in the U.S., as might be expected if time saved in market work is spent in child care. This is especially important if the goal of U.K. policy is to encourage single parents to spend more time with their children.

First, it is worth noting that single parents in both countries are generally predicted to spend more time in child care than coupled parents. Fifteen of sixteen relevant coefficients are negative in the weekday specifications; twelve of sixteen are negative in the weekend specifications. None of the positive coefficients are statistically significant, but fourteen of the negative coefficients are. These findings highlight the importance of controlling for other household characteristics, including unobserved characteristics, when examining the impact of living

arrangements on child care time, as coupled women in each country generally reported higher raw sample average times in child care. These results are consistent with the notion that children are time-intensive and that a single parent must make up for some of the time that would have been spent by the absent parent. They are not consistent with a pattern of specialization by which married women specialize in child care and married men in market work, as then we should expect married mothers to spend more time in child care than single mothers and married fathers to spend less time in child care than single fathers.

However, if single parents in the U.K. are working less in the market than partnered parents while single parents in the U.S. are working more, we might expect to see a larger marginal effect on child care time for single parents in the U.K. as compared with single parents in the U.S. Focusing on weekdays when the cross-country market time differential is greatest, we look first at primary child care time. We find that single women in both countries spend 11–13 min more on this type of care than married or cohabiting parents. For men, the magnitude of the differential is much larger, on the order of 20–56 min. However, the marginal impact of partnered status on primary child care time in the U.S. is uniformly estimated to be greater than or equal to the marginal impact of partnered status on primary child care time in the U.K. Thus, the substantial cross-country difference in market time for single parents does not appear to translate into any cross-country difference in primary child care time. This finding supports that of Bianchi (2000) who found that mothers' primary child care time did not change much (indeed increased slightly) between 1965 and 1998 despite increased employment by mothers in the U.S.

An examination of passive child care time on weekdays reveals a somewhat different story. Here we find a substantial cross-country difference between single and partnered parents' time use. In the U.S., the marginal effects indicate that partnered women spend 0–10 min less on passive care than their single counterparts while partnered men spend between 20 and 42 min less. The comparable marginal effects in the U.K. are 28–40 min for women and 90–92 min for men. Thus, while the reduced market time by single parents in the U.K. does not appear to translate into increased primary child care time, single parents in the U.K. do appear to spend more time on passive child care than their partnered counterparts relative to the U.S.

Finally, we believe it is important to note that the impacts of the number and age distribution of children are quite similar across countries. The presence of very young children—those aged three years or less—is significantly and substantially associated with mothers' time use almost across the board. An additional child of this age increases the time mothers in both the U.S. and the U.K. spend on primary child care by about an hour every day. Time spent on passive care on weekdays also increases about an hour, while time spent on market work is significantly lower on all days, by roughly an hour and a half on weekdays. Very young children also influence men's time use, but the magnitudes of these effects are much smaller. The presence of older children aged 4–11 also increases child care time, but the magnitudes of the associations diminish substantially as children age and in the case of market work a significant relationship is found only on weekdays. The presence of children aged 12–17 has a different effect altogether. In seven of eight cases it is negatively associated with primary care, consistent with the idea that older children both need less care and may possibly provide care for younger siblings. Interestingly, however, in the U.S. children aged 12–17 are positively associated with mothers' weekday passive care and negatively associated with mothers' weekday market work.

## 7 Conclusion

In this paper we investigate the determinants of the time that parents spend in primary child care activities, passive child care activities, and market work using time-diary data from the 2003 and 2004 American Time Use Study and data from the 2000 United Kingdom Time Use Study. We focus in particular on the effects of parents' living arrangements (married, cohabiting, or single) on time spent in these activities because many studies using time-diary data have not analyzed all three types of arrangements. In addition, our models allow for selection with respect to parents' living arrangements and the numbers of children in different age ranges. Failure to account for selection generally overestimates the impact of children on child care time and for women in the U.S. reverses the sign of the estimated relation between marriage and child care time. Due to the richness

of the data available to us, we are able to examine the effects of family structure on parents' time use separately by the gender of the caregiver and also by whether or not the activities occurred on a non-holiday weekday or a holiday/weekend day.

In conclusion, we find little evidence from either country that cohabiting parents allocate time differently than married parents but find substantial evidence that single parents do allocate time differently than parents who live with a partner. One common finding across countries is that single parents spend somewhat more time on both primary and passive child care than their partnered counterparts. This is perhaps because there is a threshold of parental time that must be provided to a child, regardless of whether a parent is absent. However, a finding that differs between countries is that, while single parents of both genders in the U.K. spend substantially less time in market work (particularly on weekdays) than their partnered counterparts, single parents of both genders in the U.S. spend substantially more time. We believe that this differential may be attributed to differences in the welfare systems of the two countries. At the time these data were collected the U.K. system was more supportive of single, stay-at-home parents in the U.K. while the U.S. system was more supportive of single employed parents.

## Appendix A: Sample statistics

**Table A1** ATUS sample means by gender and sample

	Women		Men	
	Full sample	Time use sample	Full sample	Time use sample
Cohabiting	0.036	0.031	0.033	0.028
Married	0.592	0.709	0.651	0.895
Children 0–3	0.219	0.393	0.201	0.416
Children 4–6	0.181	0.326	0.169	0.350
Children 7–11	0.329	0.592	0.281	0.583
Children 12–17	0.312	0.560	0.266	0.553
Other adults	0.269	0.173	0.312	0.160
Age	40.743	37.401	41.557	39.845
Less than high school (Base Case)	0.088	0.087	0.101	0.086
High school graduate	0.569	0.573	0.553	0.529
Bachelor's degree or more	0.343	0.339	0.346	0.385
Unemployment rate	5.793	5.795	5.778	5.789
Non-metro area	0.191	0.193	0.195	0.200
African American	0.124	0.108	0.097	0.072
Hispanic	0.098	0.113	0.098	0.106
Northeast (Base Case)	0.192	0.194	0.193	0.200
Midwest	0.259	0.263	0.255	0.258
South	0.345	0.340	0.341	0.326
West	0.204	0.203	0.211	0.216
Fall (Base Case)	0.244	0.245	0.252	0.249
Winter	0.264	0.269	0.269	0.275
Spring	0.239	0.234	0.233	0.235

	Women		Men	
	Full sample	Time use sample	Full sample	Time use sample
Summer	0.253	0.252	0.246	0.242
2004 Sample	0.398	0.392	0.400	0.403
Number of observations	11427	6359	9596	4620

**Table A2** UKTUS sample means by gender and sample

	Women		Men	
	Full sample	Time use sample	Full sample	Time use sample
Cohabiting	0.110	0.106	0.115	0.132
Married	0.586	0.684	0.609	0.841
Children 0–3	0.185	0.361	0.153	0.368
Children 4–6	0.137	0.274	0.108	0.262
Children 7–11	0.282	0.590	0.226	0.566
Children 12–17	0.303	0.628	0.261	0.640
Other adults	0.450	0.177	0.498	0.168
Age	38.654	36.911	40.647	39.843
No qualifications (Base Case)	0.332	0.310	0.324	0.307
Other known qualification	0.053	0.042	0.091	0.072
gcse below grade c	0.040	0.056	0.035	0.042
“O” level, gcse grade a–c	0.199	0.230	0.143	0.160
“A” level or voc. level 3	0.103	0.097	0.141	0.154
Other higher educ. degree	0.158	0.156	0.142	0.150
First or post-grad. degree	0.116	0.110	0.125	0.116
Unemployment rate	6.883	6.821	6.756	6.587
Rural	0.429	0.424	0.447	0.453
London	0.085	0.081	0.081	0.072
Fall (Base Case)		0.294		0.276
Winter		0.218		0.207
Spring		0.257		0.269
Summer		0.232		0.248
Number of observations	3574	1511	3274	1131

**Appendix B: Remaining coefficient estimates from correlated Tobit models of time-use**

**Table B1** ATUS sample

	Daily minutes of primary child care		Daily minutes of passive child care		Daily minutes of market work	
	Women	Men	Women	Men	Women	Men

	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend
Intercept	-99.5 *	-276.4 ***	-196.1 ***	-402.6 ***	81.5	-203.3 **	111.6	-538.2 ***	-519.8 ***	-858.7 ***	-47.7	-610.5 **
	(51.1)	(54.3)	(69.2)	(89.8)	(78.5)	(99.1)	(93.2)	(141.6)	(169.1)	(276.8)	(160.1)	(282.8)
Other adults	-19.5 ***	-0.4	-3.9	-30.4 ***	-20.1 **	-33.5 ***	-13.9 *	-37.4 ***	29.1 *	29.3	-1.1	10.7
	(5.5)	(5.7)	(5.4)	(10.2)	(8.6)	(10.0)	(8.3)	(13.9)	(16.6)	(25.3)	(14.6)	(28.5)
Age	7.6 ***	13.8 ***	11.3 ***	18.5 ***	-1.6	25.6 ***	-4.7	38.6 ***	43.4 ***	18.7	19.2 **	7.9
	(2.5)	(2.8)	(3.3)	(4.3)	(3.9)	(4.9)	(4.4)	(6.5)	(8.4)	(13.9)	(7.7)	(12.9)
Age squared/100	-10.4 ***	-18.4 ***	-14.5 ***	-23.9 ***	-2.6	-42.3 ***	2.6	-55.9 ***	-57.5 ***	-25.7	-24.3 **	-8.8
	(3.3)	(3.7)	(4.1)	(5.3)	(5.1)	(6.4)	(5.5)	(8.0)	(10.9)	(18.1)	(9.5)	(15.8)
African American	-38.3 ***	-40.8 ***	-7.3	-45.1 ***	-24.1 *	-48.5 ***	-20.5	-54.9 **	-26.4	-23.3	-96.1 ***	-142.7 ***
	(8.4)	(8.7)	(10.9)	(15.2)	(12.3)	(15.3)	(16.4)	(23.2)	(27.0)	(39.8)	(25.6)	(46.7)
Hispanic	-17.3 **	-10.2	-14.7	-26.4 **	27.4 **	23.2	15.8	-6.1	-8.0	-2.2	-24.9	66.4
	(7.7)	(8.5)	(10.0)	(13.1)	(12.4)	(16.8)	(14.1)	(22.1)	(25.8)	(44.4)	(23.9)	(41.2)
High school graduate	18.8 **	23.1 **	33.3 ***	31.9 **	-7.7	-23.5	-9.0	-30.3	130.8 ***	55.0	54.2 **	133.6 ***
	(8.8)	(10.6)	(11.1)	(15.3)	(13.5)	(16.8)	(14.2)	(23.5)	(29.1)	(50.0)	(23.8)	(47.3)
College + graduate	42.0 ***	64.9 ***	42.7 ***	79.6 ***	-22.8	-8.8	-9.8	-11.4	177.6 ***	111.7 **	102.4 ***	124.6 **
	(9.6)	(11.6)	(12.0)	(16.2)	(15.2)	(19.0)	(15.4)	(25.5)	(32.1)	(55.2)	(26.0)	(50.5)
Mid West	-18.8 ***	-7.1	-10.7	-5.4	-6.1	-0.8	14.9	14.7	33.6	37.9	20.3	-3.6
	(6.8)	(7.7)	(8.4)	(11.2)	(11.0)	(14.7)	(11.5)	(19.3)	(22.8)	(37.0)	(20.3)	(36.3)
South	-13.3 **	-14.0 *	-11.2	-13.4	-9.1	16.9	-3.8	-9.5	18.8	45.0	26.1	13.7
	(6.2)	(7.4)	(8.0)	(10.5)	(10.4)	(13.9)	(11.8)	(17.7)	(21.7)	(35.4)	(19.7)	(33.2)
West	-20.5 ***	-14.3	-7.9	-12.6	17.2	41.0 **	7.3	67.6 ***	-2.1	37.9	19.4	-75.4 **
	(7.3)	(8.7)	(8.8)	(12.4)	(11.9)	(16.4)	(13.2)	(20.2)	(24.4)	(40.7)	(21.8)	(38.3)
Non-metro	-21.5 ***	-9.6	-6.0	-14.0	15.5 *	36.0 ***	17.1 *	-16.6	40.3 **	44.6	21.7	87.5 ***
	(6.6)	(6.8)	(7.3)	(9.5)	(9.2)	(12.1)	(9.8)	(16.0)	(20.1)	(30.1)	(17.3)	(29.2)
Unemployment rate	1.5	-2.3	-1.6	-8.6 *	1.3	-1.4	6.3	-9.8	-17.9 *	14.2	-16.1 *	4.2
	(2.8)	(3.0)	(3.3)	(4.4)	(4.4)	(5.7)	(4.6)	(7.4)	(9.3)	(14.4)	(8.2)	(14.2)

	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	Women		Men		Women		Men		Women		Men	
	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend
Winter	-17.1***	-8.9	-5.8	-6.4	23.5**	0.7	29.9***	33.6 *	-26.0	9.2	-20.0	-4.5
	(6.3)	(7.2)	(7.1)	(10.1)	(10.4)	(13.3)	(11.1)	(17.4)	(21.1)	(33.5)	(18.4)	(33.3)
Spring	-9.8	0.3	-31.8***	3.4	26.0**	-13.6	5.0	13.0	-24.8	11.3	43.7**	44.3
	(6.6)	(7.3)	(8.2)	(10.6)	(11.0)	(13.7)	(12.2)	(18.3)	(22.3)	(34.5)	(20.6)	(33.4)
Summer	-45.8***	-13.2*	-35.0***	-9.0	56.3***	13.2	26.4**	20.1	-39.6*	-45.7	13.6	-8.6
	(6.4)	(7.4)	(7.9)	(10.4)	(10.0)	(13.7)	(11.5)	(17.7)	(21.1)	(34.9)	(19.6)	(33.2)
Year 2004	-1.8	2.5	-1.1	-2.8	-3.9	-11.7	-11.0	-10.4	-1.1	32.8	3.3	-1.1
	(4.8)	(5.4)	(5.9)	(8.1)	(7.5)	(10.1)	(8.3)	(13.3)	(15.8)	(25.5)	(14.4)	(24.9)
$\lambda$	44.4***	58.0***	40.8***	63.0***	110.9***	249.7***	116.2***	238.4***	104.9***	29.0	136.3***	101.3***
	(5.6)	(6.5)	(7.0)	(12.9)	(9.9)	(14.6)	(11.2)	(22.9)	(16.6)	(22.7)	(14.0)	(36.2)

Variance and covariance terms:

Transitory error variance	117.2***	130.4***	113.2***	153.6***	183.4***	234.4***	166.7***	275.4***	377.5***	492.3***	287.9***	472.5***
	(1.5)	(1.7)	(1.8)	(2.8)	(3.0)	(4.6)	(2.9)	(6.2)	(9.8)	(21.3)	(5.9)	(15.9)
	$\rho_{PS,f,1}$	$\rho_{PS,f,2}$	$\rho_{PS,m,1}$	$\rho_{PS,m,2}$	$\rho_{PM,f,1}$	$\rho_{PM,f,2}$	$\rho_{PM,m,1}$	$\rho_{PM,m,2}$	$\rho_{SM,f,1}$	$\rho_{SM,f,2}$	$\rho_{SM,m,1}$	$\rho_{SM,m,2}$
Transitory error correlations	-0.038*	-0.191***	0.092***	-0.026	-0.376***	-0.116***	-0.382***	-0.220***	-0.592***	-0.476***	-0.569***	-0.484***
	(0.022)	(0.024)	(0.026)	(0.031)	(0.019)	(0.030)	(0.022)	(0.033)	(0.016)	(0.024)	(0.018)	(0.027)
Discretely distributed unobserved factor $\mu$		Point 1		Point 2		Point 3		Weight 1		Weight 2		
		-1.000		1.252		3.076		-0.489		2.741		
				(0.089)		(0.259)		(0.017)		(0.126)		

Notes: Table reports selected coefficients and asymptotic standard errors (in parentheses) from correlated Tobit models of time use estimated using data from the ATUS. As described in the text, the models are estimated jointly with discrete-choice models of family structure (reported in Appendix C1). Estimates for the remaining time use coefficients are reported in Table 2.

Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

**Table B2** UKTUS sample

	Daily minutes of primary child care		Daily minutes of passive child care		Daily minutes of market work	
	Women	Men	Women	Men	Women	Men

	Week day	Weekend	Week day	Weekend	Week day	Weekend	Weekday	Weekend	Week day	Weekend	Week day	Weekend
Intercept	38.8	-141.3	7.7	-182.1*	-441.8*	1135.1***	-154.9	-752.9*	-631.0**	36.9	-479.7	-838.5
	(75.4)	(86.6)	(95.6)	(102.7)	(253.7)	(417.6)	(222.3)	(416.4)	(309.5)	(539.6)	(297.2)	(648.5)
Other adults	-4.9	-18.5*	-11.8	-2.1	-32.4	-89.5***	-12.7	-64.0**	-39.8	-53.2	-0.1	-20.8
	(8.8)	(10.5)	(12.7)	(13.2)	(19.7)	(25.3)	(24.6)	(32.3)	(31.2)	(59.1)	(33.7)	(62.4)
Age	0.2	4.6	-0.4	6.6	6.9	26.9**	1.7	13.4	39.8**	-18.7	41.1***	26.6
	(4.1)	(4.3)	(4.6)	(4.5)	(8.2)	(12.1)	(8.5)	(12.9)	(16.3)	(28.8)	(13.7)	(29.9)
Age squared	-2.7	-7.3	0.6	-9.8*	-11.0	-34.1**	-1.5	-15.0	-47.7**	19.7	-53.5***	-37.5
	(5.6)	(6.0)	(5.7)	(5.6)	(11.2)	(16.2)	(10.5)	(15.6)	(21.1)	(37.2)	(16.2)	(36.5)
First or post-grad degree	3.2	26.4**	1.8	21.7	-35.5	24.2	-28.5	52.7	161.6***	55.7	19.4	-153.7
	(12.0)	(13.0)	(13.7)	(15.8)	(24.6)	(35.5)	(26.2)	(39.4)	(47.7)	(85.7)	(46.5)	(101.8)
Other higher educ. degree	-5.0	14.8	-24.2	-3.4	-42.6	-32.3	-61.2	-16.2	175.4*	-240.5	67.3	-231.5*
	(28.2)	(28.1)	(21.3)	(22.2)	(56.1)	(99.0)	(39.1)	(48.4)	(101.2)	(280.9)	(68.1)	(136.8)
Higher educ. below degree level	-0.8	0.1	2.0	23.0	-18.8	-4.0	5.2	73.0*	125.3***	55.9	43.2	-269.2**
	(11.4)	(12.5)	(14.7)	(15.8)	(21.9)	(33.1)	(28.0)	(40.8)	(38.9)	(74.2)	(52.5)	(105.0)
“A” level or voc. level 3	-12.8	10.2	9.5	3.7	-53.6**	12.9	-0.1	19.8	152.4***	-4.9	31.8	22.0
	(12.4)	(12.8)	(12.6)	(13.6)	(23.5)	(38.5)	(24.0)	(38.2)	(46.6)	(87.1)	(39.9)	(87.1)
“O” level, gcse grade a-c	-10.5	-14.1	11.7	-7.2	0.8	42.2	22.5	60.7*	101.6***	-43.5	9.6	-98.5
	(9.7)	(10.3)	(12.7)	(14.6)	(19.2)	(27.6)	(22.6)	(36.8)	(35.1)	(64.9)	(40.9)	(85.4)
gcse below grade c	-21.0	-22.1	7.6	-5.7	-4.5	8.6	27.3	41.7	102.8*	-151.6	16.9	192.5
	(18.1)	(18.1)	(23.7)	(22.8)	(31.8)	(47.2)	(43.8)	(65.6)	(58.9)	(122.5)	(67.8)	(133.4)
Other known qualifications	-10.4	-14.9	-9.1	-3.0	54.0	-25.4	-54.7*	-74.4	-92.8	-119.7	106.1**	-13.0
	(21.6)	(21.5)	(17.7)	(17.7)	(37.7)	(48.9)	(32.4)	(49.3)	(73.2)	(138.4)	(54.1)	(104.6)
Unemployment rate	-0.7	-0.6	-0.8	-2.2	1.7	-0.9	-2.4	-7.8**	-7.5**	-13.9*	-6.5	9.7
	(1.0)	(1.1)	(1.2)	(1.4)	(2.2)	(3.1)	(2.6)	(3.9)	(3.7)	(7.9)	(4.1)	(8.3)
Winter	11.8	12.5	-17.0	1.1	7.2	16.4	0.7	-28.1	-18.2	66.7	49.2	45.8
	(9.5)	(10.4)	(11.9)	(13.2)	(19.9)	(29.1)	(24.6)	(36.7)	(35.4)	(70.8)	(41.6)	(82.4)

	Daily minutes of primary child care				Daily minutes of passive child care				Daily minutes of market work			
	Women		Men		Women		Men		Women		Men	
	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend	Week day	Weekend
Spring	-5.3	2.8	-14.4	-5.8	20.8	17.9	-4.2	-7.0	-11.4	12.0	-18.7	-6.2
	(9.5)	(10.7)	(10.9)	(12.0)	(19.8)	(28.2)	(22.0)	(31.9)	(33.0)	(62.9)	(36.0)	(75.4)
Summer	-28.3***	1.5	-15.3	-10.7	73.9***	25.3	22.6	-32.0	-80.0**	-38.9	-54.0	32.3
	(9.9)	(10.6)	(10.8)	(12.8)	(18.5)	(28.1)	(21.4)	(33.8)	(35.0)	(66.7)	(36.0)	(76.0)
Rural	3.6	7.2	-6.2	-8.4	24.6	-7.9	1.7	-13.5	-57.2**	8.6	21.0	32.4
	(7.7)	(8.0)	(8.8)	(9.9)	(15.4)	(23.7)	(17.2)	(27.8)	(27.6)	(50.3)	(28.5)	(60.8)
London	16.3	5.8	-4.4	7.2	-36.9	-34.5	33.8	-17.0	-94.4**	-95.9	-17.1	51.0
	(14.1)	(14.3)	(16.2)	(18.3)	(28.8)	(39.9)	(32.4)	(46.1)	(46.8)	(102.9)	(60.2)	(117.4)
$\lambda$	43.7** *	65.4** *	21.1** *	42.4** *	306.8* **	569.9* **	206.4* **	504.3* **	-5.0	-18.2	10.4	-0.9
	(8.4)	(11.9)	(6.7)	(12.4)	(42.8)	(80.3)	(34.2)	(76.0)	(13.1)	(22.9)	(13.7)	(29.3)

Variance and covariance terms:

Transitory error variance	94.8***	98.7***	89.5***	95.0***	181.9***	225.4***	182.5***	261.6***	353.8***	523.1***	338.9***	598.1***
	(2.2)	(2.5)	(2.8)	(3.5)	(6.2)	(10.7)	(5.8)	(12.3)	(17.9)	(54.6)	(12.4)	(46.7)
	$\rho_{PS,f,1}$	$\rho_{PS,f,2}$	$\rho_{PS,m,1}$	$\rho_{PS,m,2}$	$\rho_{PM,f,1}$	$\rho_{PM,f,2}$	$\rho_{PM,m,1}$	$\rho_{PM,m,2}$	$\rho_{SM,f,1}$	$\rho_{SM,f,2}$	$\rho_{SM,m,1}$	$\rho_{SM,m,2}$
Transitory error correlations	-0.010	-0.051	0.279***	0.093	-0.350***	-0.201***	-0.385***	-0.241***	-0.536***	-0.644***	-0.515***	-0.621***
	(0.043)	(0.053)	(0.045)	(0.057)	(0.039)	(0.062)	(0.039)	(0.060)	(0.035)	(0.051)	(0.032)	(0.047)
Discretely distributed unobserved factor $\mu$	Point 1	Point 2	Point 3	Point 4	Point 5	Weight 1	Weight 2	Weight 3	Weight 4			
	-2.334	0.772	1.466* *	2.033* *	2.360* **	-0.520***	-0.238***	0.205* **	0.983* **			
	(0.663)	(0.734)	(0.789)	(0.825)	(0.052)	(0.053)	(0.065)	(0.282)				

Notes: Table reports selected coefficients and asymptotic standard errors (in parentheses) from correlated Tobit models of time use estimated using data from the UKTUS. As described in the text, the models are estimated jointly with discrete-choice models of family structure (reported in Appendix C2). Estimates for the remaining time use coefficients are reported in Table 2

\*Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

## Appendix C: Family structure equations

Table C1 ATUS sample

	Cohabiting	Married	Children 0–3	Children 4–6	Children 7–11	Children 12–17
Intercept	-3.546 ***	-7.869 ***	-4.070 ***	-6.176 ***	-9.289 ***	-12.167 ***

	<b>Cohabiting</b>	<b>Married</b>	<b>Children 0–3</b>	<b>Children 4–6</b>	<b>Children 7–11</b>	<b>Children 12–17</b>
	(0.596)	(0.366)	(0.264)	(0.262)	(0.256)	(0.238)
Female	−0.165 **	−0.524 ***	−0.170 ***	−0.082 ***	0.058 **	0.123 ***
	(0.083)	(0.047)	(0.029)	(0.026)	(0.023)	(0.022)
Age	0.148 ***	0.399 ***	0.217 ***	0.299 ***	0.463 ***	0.546 ***
	(0.028)	(0.016)	(0.013)	(0.012)	(0.012)	(0.011)
Age squared	−0.238 ***	−0.462 ***	−0.412 ***	−0.453 ***	−0.605 ***	−0.631 ***
	(0.037)	(0.019)	(0.018)	(0.016)	(0.014)	(0.013)
Black	−0.728 ***	−1.851 ***	−0.199 ***	−0.126 ***	0.009	−0.056
	(0.128)	(0.066)	(0.047)	(0.044)	(0.037)	(0.034)
Hispanic	−0.315 **	0.047	0.100 **	0.141 ***	0.096 **	0.094 **
	(0.141)	(0.073)	(0.046)	(0.044)	(0.040)	(0.039)
High school	0.165	0.259 ***	0.032	−0.174 ***	−0.171 ***	−0.166 ***
	(0.131)	(0.078)	(0.049)	(0.049)	(0.043)	(0.040)
College	−0.390 **	0.706 ***	0.376 ***	0.001	−0.231 ***	−0.320 ***
	(0.159)	(0.085)	(0.054)	(0.052)	(0.046)	(0.043)
Midwest	−0.119	0.149 **	−0.021	0.050	−0.008	0.062 *
	(0.120)	(0.065)	(0.041)	(0.038)	(0.033)	(0.032)
South	−0.265 **	0.168 ***	−0.116 ***	−0.015	−0.046	0.037
	(0.116)	(0.061)	(0.039)	(0.037)	(0.031)	(0.030)
West	0.001	0.068	−0.027	0.038	−0.046	0.015
	(0.127)	(0.069)	(0.043)	(0.041)	(0.036)	(0.034)
Rural	0.300 ***	0.221 ***	−0.055	0.017	0.096 ***	0.109 ***
	(0.099)	(0.054)	(0.035)	(0.033)	(0.028)	(0.026)
Unemployment rate	−0.078 *	−0.040	0.017	0.023	−0.013	0.013
	(0.046)	(0.025)	(0.016)	(0.015)	(0.013)	(0.012)
Year 2004	0.207 **	0.062	0.014	0.041	0.003	0.006
	(0.085)	(0.044)	(0.028)	(0.026)	(0.023)	(0.022)
$\tau_1$			1.181 ***	1.297 ***	1.016 ***	0.900 ***
			(0.020)	(0.023)	(0.015)	(0.015)
$\tau_2$					2.123 ***	1.932 ***
					(0.036)	(0.034)
$\lambda$	0.300 ***	1.273 ***	1.000	0.748 ***	0.579 ***	0.198 ***
	(0.058)	(0.063)		(0.040)	(0.028)	(0.017)
Log likelihood	−118005.91					

Notes: Table reports coefficients and asymptotic standard errors (in parentheses) from discrete-choice models of family structure estimated using data from the ATUS

\*Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

**Table C2** UKTUS sample

	<b>Cohabiting</b>	<b>Married</b>	<b>Children 0–3</b>	<b>Children 4–6</b>	<b>Children 7–11</b>	<b>Children 12–17</b>
Intercept	−6.481***	−10.739***	−6.833***	−9.680***	−13.167***	−13.947***
	(0.846)	(0.728)	(0.955)	(0.922)	(0.767)	(0.654)
Female	−0.305**	−0.230**	−0.019	0.050	0.148**	0.150***
	(0.126)	(0.101)	(0.083)	(0.078)	(0.072)	(0.057)
Age	0.294***	0.500***	0.324***	0.457***	0.631***	0.626***
	(0.044)	(0.032)	(0.031)	(0.041)	(0.034)	(0.030)
Age squared	−0.390***	−0.513***	−0.543***	−0.669***	−0.815***	−0.717***
	(0.057)	(0.039)	(0.046)	(0.057)	(0.043)	(0.034)
First or post-grad. degree	0.467**	−0.150	−0.397***	−0.468***	−0.418***	−0.158*
	(0.194)	(0.159)	(0.132)	(0.132)	(0.112)	(0.094)
Other higher educ. degree	−0.295	0.156	−0.485**	−0.479**	−0.441**	−0.427**
	(0.367)	(0.276)	(0.228)	(0.241)	(0.197)	(0.187)
Higher educ. below degree level	0.243	−0.126	−0.267**	−0.338***	−0.205*	−0.115
	(0.213)	(0.152)	(0.135)	(0.129)	(0.111)	(0.089)
“A” level or voc. level 3	0.422**	0.254	−0.362***	−0.227*	−0.145	−0.222**
	(0.204)	(0.156)	(0.120)	(0.124)	(0.102)	(0.103)
“O” level, gcse grade a–c	0.161	0.108	−0.163	−0.200*	−0.123	−0.071
	(0.187)	(0.132)	(0.104)	(0.106)	(0.087)	(0.078)
gcse below grade c	−0.493	−0.053	−0.102	0.002	−0.021	−0.019
	(0.398)	(0.239)	(0.169)	(0.184)	(0.164)	(0.146)
Other known qualifications	−0.006	−0.073	−0.244	0.084	−0.030	−0.045
	(0.295)	(0.198)	(0.159)	(0.157)	(0.150)	(0.115)
Rural	−0.023	0.263***	−0.006	0.134*	0.046	−0.108*
	(0.133)	(0.099)	(0.082)	(0.081)	(0.070)	(0.058)
Unemployment rate	−0.015	−0.075***	−0.003	−0.001	0.010	0.003
	(0.017)	(0.013)	(0.010)	(0.010)	(0.008)	(0.007)
London	−0.305	−0.310*	−0.203	0.072	0.113	−0.055
	(0.211)	(0.170)	(0.137)	(0.141)	(0.111)	(0.099)
$\tau_1$			1.221***	1.287***	0.980***	0.798***
			(0.064)	(0.074)	(0.043)	(0.035)
$\tau_2$					2.188***	1.802***
					(0.109)	(0.078)
$\lambda$	0.311***	0.621***	1.000	0.769***	0.514***	0.129***
	(0.081)	(0.120)		(0.175)	(0.094)	(0.033)
Log likelihood	−35713.67					

Notes: Table reports coefficients and asymptotic standard errors (in parentheses) from discrete-choice models of family structure estimated using data from the UKTUS

\*Significant at .10 level; \*\*Significant at .05 level; \*\*\*Significant at .01 level

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### Footnotes

<sup>1</sup> About 11% of children lived with cohabiting parents and 24% lived with single parents in the U.K. in 2004 ([www.statistics.gov.uk/cci/nugget.asp?id=1163](http://www.statistics.gov.uk/cci/nugget.asp?id=1163)). In 2000 less than 6% of children in the U.S. lived with cohabiting parents and somewhat less than 28% lived with single parents ([www.census.gov/prod/2004pubs/censr-14.pdf](http://www.census.gov/prod/2004pubs/censr-14.pdf)).

<sup>2</sup> In 2005 about 75% of employed mothers in the U.S. were working full-time ([www.bls.gov/news.release/famee.t05.htm](http://www.bls.gov/news.release/famee.t05.htm)), as compared with about half of all women in the U.K. ([www.statistics.gov.uk/cci/nugget.asp?id=1654](http://www.statistics.gov.uk/cci/nugget.asp?id=1654)).

<sup>3</sup> Policy reforms have been implemented in both countries since these data were collected. The 2006 Deficit Reduction Act, which reauthorized TANF, further increased the work orientation in the U.S. system. Meanwhile, the British government is aiming for 70% employment by lone parents by 2010.

<sup>4</sup> Folbre et al. (2005) argue for a more inclusive measure that includes time spent while the child is sleeping. Bianchi (2000) and Kalenkoski et al. (2005) look at time spent on secondary child care.

<sup>5</sup> An advantage of The UKTUS over the ATUS is that all intrahousehold relationships are identified. Thus, it is possible to 'fix' misreported relations using other information in the sample and to accurately identify all children of cohabiting partners. In this respect, the UKTUS sample will be 'cleaner' than the ATUS sample. However, a comparison of the UKTUS sample used here with another constructed using the same restrictions imposed upon the ATUS reveals only minor differences. Most notably, less than 40 households with unrelated children and only 1 adult (who might reasonably be considered the legal guardian) are excluded from our UKTUS sample but would be included under ATUS sample rules.

<sup>6</sup> Diaries containing fewer than five different activity codes and those missing more than one hour of information are excluded from both the ATUS and the UKTUS diary samples.

<sup>7</sup> An age cutoff of 14 is introduced here because the UKTUS does not provide sufficient detail when recording who else is present during an activity to identify children aged 15–17.

<sup>8</sup> Data availability poses another problem. Wage information is only available for a subset of employed persons and household income is but imperfectly measured.

<sup>9</sup> The system of equations was estimated using the aML software. Estimation of the time use equations actually proceeded using ordered probit models with known thresholds (60 min intervals) as aML was unable to estimate the Tobit specification with family structure equations using a discretely distributed unobserved factor.

<sup>10</sup> As an example of how factor-analytic covariance restrictions can identify a model, consider a simple specification with a single outcome variable,  $y$ , and two endogenous explanatory variables,  $x_1$  and  $x_2$ . Assume that  $x_1$  and  $x_2$  each depend on a common unobserved random component (factor),  $\mu$ , and independent random components,  $\varepsilon_1$  and  $\varepsilon_2$ , such that  $x_1 = \mu + \varepsilon_1$  and  $x_2 = \mu + \varepsilon_2$ . The outcome variable,  $y$ ,

depends on the two observed explanatory variables, the common random component, and its own independent random component,  $\eta$ , such that  $y = \beta_1 x_1 + \beta_2 x_2 + \mu + \eta$  where  $\beta_1$  and  $\beta_2$  are coefficients. For simplicity, assume that all of the random components are continuously distributed with zero means, constant

$$E(\varepsilon_1) = E(\varepsilon_2) = E(\eta) = E(\mu) = 0 \quad E(\varepsilon_1^2) = \sigma_1^2$$

variances, and no mutual correlations so that

$$E(\varepsilon_2^2) = \sigma_2^2 \quad E(\eta^2) = \sigma_\eta^2 \quad E(\mu^2) = \sigma_\mu^2$$

$$E(\varepsilon_1 \varepsilon_2) = E(\varepsilon_1 \eta) = E(\varepsilon_2 \eta) = E(\varepsilon_1 \mu) = E(\varepsilon_2 \mu) = E(\eta \mu) = 0$$

and the covariance matrix for  $y$ ,  $x_1$  and  $x_2$  has six elements. Let  $s_y^2$ ,  $s_1^2$  and  $s_2^2$  denote the sample variances, and let  $s_{y1}$ ,  $s_{y2}$  and  $s_{12}$  denote the sample covariances. Method of Moments estimators for  $\beta_1$  and

$$\hat{\beta}_1 = \frac{(s_{y1} - s_{12})s_2^2 - (s_{y2} - s_{12})s_{12}}{s_1^2 s_2^2 - s_{12}^2} \quad \hat{\beta}_2 = \frac{(s_{y2} - s_{12})s_1^2 - (s_{y1} - s_{12})s_{12}}{s_1^2 s_2^2 - s_{12}^2},$$

$\beta_2$  are which are identified even though there are no variable exclusion restrictions.

- <sup>11</sup> Note, however, that we do find significant differences between married and cohabiting parents in the U.S. when the common factor is not included. This finding underscores the importance of controlling for selection into family type.
- <sup>12</sup> Ideally we would distinguish between own, step, and foster children. Such a distinction is, however, not possible with the U.S. data and likely not feasible in either case due to small populations. Only 4.5% of all children in the U.K. sample are not 'own'.
- <sup>13</sup> U.S. statistics come from <http://www.bls.gov/news.release/famee.t05.htm>; U.K. statistics come from <http://www.statistics.gov.uk/cci/nugget.asp?id=1655>.