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ABSTRACT

The expected response of individuals to policy changes usually requires that they use their resources in a different way, according to the changed relative opportunity cost of undertaking each that the policy effects. However, it has often been noted that the allocation of time to different activities does not respond smoothly, and rather appears to be influenced by a range of non economic factors that lead to opportunity costs and trade-offs being different for different individuals, depending not just on the constraints they face, but also on the activities they are already 'specialised' at. In this paper we use the British Household Panel Survey to examine how time packages - the allocation of weekly hours to a combination of paid and unpaid work and leisure - affect life satisfaction, and the marginal returns from additional hours spent in paid work, overtime, caring and housework. We observe that for men in general, the marginal benefits of an additional hour of paid work, or extra work (in the form of overtime or a second job) are positive, while an additional hour of caring has a negative effect on life satisfaction. For men who are leisure rich, however, the marginal benefits of an additional hour of housework are positive. Leisure rich men appear to gain satisfaction from doing housework, in a way that other men do not. The same applies to women. Women are in general less satisfied by taking on overtime or second jobs, presumably preferring to use that discretionary time at home in leisure pursuits or with children. For women doing full-time paid work, the marginal effect of an additional hour of extra work (overtime or a second job) is negative; for women already stretched by full-time paid work, extra hours are an unwelcome burden. We discuss the role that different kinds of constraints, including gender attitudes, play in determining our results and the implications for policy design.

Keywords: happiness, time use

JEL Codes: D13, I31

INTRODUCTION

Data from time use surveys across a range of developing and developed countries shows that time devoted to home production, including housework, caring for dependent relatives and bringing up children, constitutes a significant proportion of overall working time (Antonopoulos, 2008). Burda et al. (2007) define total work as the sum of time spent in production in the market and the household, where household production includes all those activities that could be substituted for market goods and services, such as childcare and housework. They note the different marginal utilities of different uses of time, commenting:

Why for example is the marginal minute spent in an office dealing with recalcitrant colleagues and demanding supervisors more pleasurable than the marginal minute spent shopping, cooking or taking care of children?. (ibid p.26).

Burda et al's comment suggests that all uses of time are not equal in terms of their impact on overall utility. We can assume, however, from the fact that some people who could work choose to devote time to home production, while others work all the hours they can - that some gain greater utility from 'unpaid' work than others. It is clear that people choose to package up their time in different ways, favouring varying combinations of paid work, unpaid work and leisure, and we should expect that they do in an effort to maximize their life satisfaction within constraints. By extension, we might also expect that marginal returns from spending an hour minute shopping and cooking may depend on people's underlying package of responsibilities. Compared with a working parent with full-time caring responsibilities, a leisure rich person may gain greater utility from an additional minute spent in an office, while the parent would prefer to spend it taking care of children.

In this paper we use the British Household Panel Survey to examine how time packages - the allocation of weekly hours to a combination of paid and unpaid work and leisure - affect life satisfaction. Our time packages are broadly similar for men and women, although we identify that significant numbers of women (16%) but very few men opt for a package that involves a combination of part-time paid work and part-time unpaid work. We examine the relationship between each time package and life satisfaction, and the marginal returns from additional hours spent in paid work, overtime, caring and housework.

LITERATURE REVIEW

Data from time use surveys undertaken in both developing and developed countries shows that time devoted to home production constitute a significant proportion of overall working time, and that women perform the majority of this work (overall on average 53 per cent more time than men). Whilst a proportion of all unpaid work is connected to market activities, most of the gap constitutes either direct caring or provision of intermediate inputs into caring provision for both dependents and adults (Antonopoulos, 2008).

Time spent on housework has been connected to lower wages, particularly for women, and explains a substantial share of the gender wage gap (for a comprehensive review of the evidence, see Hersch, 2009). This division of labour is not only present across countries, but also appears to amount to an equal split of total work in developed non-Catholic countries (Burda et al., 2007), define the total work as the sum of time spent in production in the market and the household (where household production are all those activities that could be substituted for market goods and services). On this basis, Burda et al (2007) find evidence of iso-work, that is equal total amounts of work being performed by women and men (married and unmarried) in the US, Germany and Netherlands, and a consistent gender difference in non-work activities with men enjoying more leisure and women spending more time in tertiary activities (defined as those things that we cannot pay other people to do for us - sleeping, eating, and other biological needs). Using evidence from other studies and datasets they create a sample of time use for 27 countries and find that iso-work occurs in non-Catholic rich countries, but not in developing or Catholic rich ones. The authors interpret this phenomenon as evidence of a convergence of total work across gender with GDP per capita, and explain it with the presence of a social norm for leisure that makes time use become similar across individuals through a combination of peer pressure and desire to conform that outweighs the effect of market incentives and individual tastes. They also note that iso-work does not imply iso-utility and cite Mattingly and Bianchi (2003) whose results on the different quantity and quality of time available to men and women in the US indicate that men tend to have more uninterrupted time and this gap is exacerbated by marriage and children

Evidence that this may be the case is offered in Gupta (2006) and Gupta and Ash (2008) who show that in the US (and Germany and Sweden) women's earnings are systematically negatively associated with their housework hours, independent of their partners' earnings and their shares of couples' total earnings. Further to this, they report widespread evidence from expenditure surveys that married women's earnings are as associated with household spending on dining out, housecleaning services, and paid childcare (Cohen, 1998; Brandon, 1999; Phipps and Burton, 1998): given the means and the choice, at least some housework is indeed less preferred to market work!

Balancing both paid and unpaid work does not necessarily mitigate the problem, as revealed by both the large body of evidence reviewed and the Canadian data analysed by MacDonald et al (2005); indeed the intensity and the combination of hours of market and non market work and the conflicting demands and role overloads they can create have consistently been found to be related to stress and poor health. Their analysis shows that women's greater hours of unpaid work contribute to women experiencing more stress than men, and of that work, hours spent on eldercare and housework are more stressful than those spent on childcare. They also find that neither spouse's unpaid work nor most job characteristics alleviate stress, once work hours are controlled, though there is evidence that women revert to self-employment to improve work-life balance.

It is also possible that there are systematic gender differences in preferences and degree of altruism possibly due to gendered socialization patterns: this would help explain why for example Kalenkoski et al (2008) using data from the 2000 UK Time Use Panel Survey find that whilst women's time allocation between childcare and market work is responsive to partner as well as own wages, men's responds only to their own wage.

The connection between gender patterns in time allocation and development has also been studied in connection with fertility: in a recent symposium on the Journal of Economic Perspectives Feyrer et al (2008) discuss a model in which changes in women's status drives fertility change. At low levels of female status, women specialize in household production and fertility is high, countries in which women begin to have opportunities for market work but limited support from their partners in housework see a huge fertility decline (as for Japan, Spain and Italy). We see the lowest fertility nations (Japan, Spain, Italy) as being in this regime. When women's status improves further and men begin to share childcare (or, we would also add, the childcare market develops), fertility is higher again (US, Sweden and other Countries). The rich countries with the highest fertility are those in which men perform relatively more of the childcare and household production and where female labor force participation was highest 30 years ago, so that fertility and women's labor force participation have become positively correlated across high income countries.

Measures of Caring Time

Measures of time spent caring are often omitted from large surveys and even when they are included they are not necessarily providing a good indication of the actual amounts of time a child has spent in direct contact with an adult or the quality of the attention they have received (for example adults may be simply available and busy supervising other children at the same time, or they may instead be directly engaged with the child together with other adults). To illustrate the issues, Folbre et al (2004) perform a thorough analysis of care time in the US using the Child Development Supplement of the Panel Study of

Income Dynamics for 1997 and provide also measures of the density of care that is the ratio of adults to young children participating in an activity (increased by adult overlaps and decreased by child overlaps). Caregiver overlaps are known to reduce the stress level of caregivers and to be beneficial for children by providing opportunity to see adults interacting with each other. Evidence from studies of parental overlap reported in the paper indeed suggest that spouses would prefer parental overlap but that they are often constrained to sequential care giving, especially when children are small. Folbre et al also show that after controlling for race/ethnicity and maternal working hours, children in mother-only families spend no less time with at least one parent than do children in two-parent families and that the temporal advantages of living with two parents rest largely on the value of spending time with both parents at once. Obviously density is costly as it requires higher quantities of adult time per child, and regulatory limits exist for paid child care services which are formulated specifically in terms of density ratios (as well as qualifications). Folbre et al conclude that estimates of the opportunity cost of parental time should be based on the total number of hours that parents spend with children, whilst estimates of the replacement cost of parental time should be based only on time where another parent or carer is not present. Their results also help explain the apparently puzzling finding that the time that mothers spend in activities with children change relatively little as they increase their hours of employment. This time turns out to be only a small share of their total supervisory responsibilities. Furthermore, mothers and fathers can reallocate their time in ways that reduce overlap, thus spreading their hours out in more efficient ways (at the expense of more stress for parents).

Time Poverty

Evidence suggests that both mothers and fathers suffer from shortages of time and would like to spend with their children. The UK National Centre for Social Research conducted a study on the influence of atypical working hours (for definition see categories below) on family life (La Valle et al, 2001) using a sample drawn from a nationally representative survey of parents of 0-14 year olds and comprising parents of children between 2 and 17 years of age. The study found that these are widespread among working parents with 21 per cent of mothers and 41 per cent of fathers working early mornings (6-8.30am); 25 per cent of mothers and 45 per cent of fathers working late afternoons (5.30-8.30pm); 14 per cent of mothers and 17 per cent of fathers work after 8.30 pm several times a week, 38 per cent of mothers and 54 per cent of fathers work at least one Saturday a month and 25 per cent of mothers and almost a third of fathers work on Sundays. Almost a third of fathers also reported working over the 48 hour limit of the Working Time directive, particularly those in managerial and professional jobs. The same study found that 12 per cent of all employed mothers, 18 per cent of all employed fathers, and 32 per cent of mothers and 46 per cent of fathers working atypical hours said their work limited the time they could spend reading, playing and helping children with homework, and dissatisfaction with time spent with children and with time spent as a couple was twice as high among those working atypical hours.

A recently published Rowntree study conducted by Tania Burchardt (2008) using the UK Time Use Survey deploys a model of time and income capability to show how allocations of time may produce income poverty, time poverty or both. She finds that around half of lone parents cannot generate sufficient income to be above the poverty line however long or hard they work, and that although the combination of time and income poverty is rare for adults of working age, only 44 per cent of children are in households that are free of both kinds of poverty, and this is likely to affect their wellbeing. The study finds that in order to be free of

both time and income poverty individuals need both high resources (human capital, good health, a partner and free help from family) and few responsibilities (no children or older children), and men are less likely to experience both time and income poverty than women: compared with a gender-neutral allocation of responsibilities (that is if responsibilities were allocated equally keeping constant each partner's paid work hours) 64 per cent of women have less free time than they would. Interviews conducted with individuals who are both time and income poor suggested that improvements in the availability of childcare, flexible working and non discrimination in part time working, and extension of benefits (extended nursery vouchers, baby bonus and childcare credit for parents at home) would all improve their position.

Effect on Children

A recent review of the effects of different benefits on time allocation and child wellbeing across countries (Brewer et al, 2009, F3), suggests that in North America the increase in work benefits for lone parents has benefited their children (suggesting that income effects, in the form of extra income available to the family, dominate the negative effects from the reduced time spent with the parent), but has had an adverse effect on teenagers. In the UK Gregg et al (2009) found positive effects on teenage boys (as well as improvements in mental health and life satisfaction for lone parents), but not on girls. (Their data does not allow a study of younger children). Indeed the problem of evaluating the effect of welfare reforms on children has been extensively discussed by Waldfogel (2007). Perhaps the most thorough studies available on the question of how mother's employment affect children's development (both cognitive abilities and behavioural scores) have been conducted by Heather Joshi and collaborators working with British (and recently US) cohort studies. Joshi et al (1999) find that income, human and social capital matter more to children's outcomes than whether the mothers are single or employed, though negative effects were present for smaller children. (This evidence was used to extend maternity leave provision). In a recent update of their work, Joshi et al (2008) found that after controlling for maternal human capital, there still is little evidence for a negative effect, especially if the job is part-time and some small negative effect on children's reading comprehension in the US from full time employment on the first year of the child's life. Children's cognitive outcomes are found to be more sensitive to mother's education and ability than behavioural adjustment, and often the effects are in opposite directions, for example they find that in the UK sample day nursery is associated with better maths score but also with more aggression.

In summary, the literature suggests that unpaid work is an important component of how people spend their time, that women do more of it, and that hours spent on unpaid work are related to stress and have negative outcomes for children. Time use choices are constrained by income and the availability of other adults to share unpaid work with; not everyone has the luxury of being able to choose to be leisure rich. The objective of this study is to ascertain whether people gain different marginal utilities from additional minutes doing different types of activity (work, care for sick or elderly dependents, childcare or housework), and how these differences depend on their basic allocation of activities. These questions are important if we are to understand whether micro-adjustments in time use that are made possible by policy interventions (such as tax relief on childcare costs, for example) are likely to have marginal benefits for life satisfaction.

DATA AND METHODS

Data on Time Use

We utilise data from the British Household Panel Survey (BHPS), a longitudinal study of around 5,500 households and over 10,000 individuals which began in 1991 and collects social and economic data at both the individual and household level. The BHPS collects data on original panel members and subsequently any new household members, as well as following original panel members to any new households. The BHPS provides information on both life satisfaction and time use, as well as many socio-economic and attitudinal variables. We utilise BHPS data over the period 1996-2007, including any individual with at least two years of consecutive full interview data. There are 22,637 individuals in the panel with an average of 7 years' worth of data (there is a minimum of two years and a maximum of 12 years), which leads to a 163,015 person year observations.

Our primary aim is to divide our sample into different groups based on their time use. Within the BHPS there is information on the amount of hours spent:

- **Employment.** Normal hours (including self employment), overtime hours and hours spent in an occasional or a second job. Normal hours and overtime hours are measured in hours per week and second/occasional job hours per month. Total work hours are summed across all types of work.
- **Commuting time.** Measured in minutes and refers to the one-way door to door commuting time. Respondents in the BHPS are asked "About how much time does it usually take for you to get to work each day, door to door?" We approximate weekly hours spent commuting by converting to a round trip and assuming a five day working week. Due to the uncertainty within this assumption (since we do not know how many days a week are worked, and whether any work is done at home or staying away) we use commuting time as a guide to help sort our time groups only, and were not used directly in models of life satisfaction.
- **Housework.** Respondents are asked "About how many hours do you spend on housework in an average week, such as time spent cooking, cleaning and doing the laundry?"
- **Caring.** Respondents are asked "Is there anyone living with you who is sick, handicapped or elderly whom you look after or give special help to (for example, a sick or handicapped (or elderly) relative/ husband/ wife/ friend, etc)?" and "Do you provide some regular service or help for any sick, handicapped or elderly person not living with you?" They are then asked "In total, how many hours do you spend each week looking after or helping (him/her/them)?" Total hours include caring for individuals in and outside the household.

As there is no information on childcare hours within the BHPS, we approximated childcare hours using the 2000 Time Use Survey (TUS). The TUS, undertaken in 2000, asked respondents to record their time use in 10 minute slots for one weekday and weekend day, and also captured general social and economic information about individuals and their households. We performed an OLS regression of daily child care reported in the TUS, using variables that were common to the TUS and the BHPS as predictors. We then used the OLS coefficients to estimate childcare hours for respondents with children under 16 in the BHPS.

Full details of how this was done, with the OLS regressions, are given in the Appendix. It should be noted that estimates of child care in the BHPS were intended to help divide individuals into groups rather than to be used directly in models of life satisfaction.

Time Package Construction

Our primary aim is to divide individuals into groups based on their paid and unpaid work activities (adult care, housework and child care). Given the different roles of males and females (for example across the whole panel 61% of males work 30 hours or more compared to only 34% of women, with median housework hours of 14 for women and only 4 for men), it makes sense to construct the time packages separately by gender.

Males. We start by allocating men into four categories based on their working hours. Individuals who reported their economic status as being sick/long term disabled were excluded, given that this is not a choice. Full time work is defined in the BHPS as 30 hours or more. The four categories of working hours were as follows:

- 1) Full time work – 30 hours or more
- 2) Long hours – 50 hours or more (50 hours per week is the 75% percentile for full time employed men)
- 3) Part time work – less than 30 hours
- 4) Not employed (excluding those listed as sick/disabled)

The average commuting time for working men was 23 minutes or with a median of 15 minutes and 75 percentile of 30 minutes. There were some people with extraordinary large commuting times with a maximum of 500 minutes (hence why we did not want to use commuting time explicitly in generating our time use groups). These large commuting times could arise from people having dual residence i.e. coming home at the weekend, who only travel occasionally or who spend most of their time at work or have a lot of travel within their job (although this should already be included as part of their working hours). Since the 75% percentile is approximately 5 hours a week of commuting a week, we reallocated anybody in group 1 with a total of work hours and commuting hours of more than 55 hours per week to group 2 (long hours).

On average men do 5 hours of unpaid work (housework and adult caring). Given that the male regressions are not good predictors of male childcare and that men, on average, do very little child care relative to women (observed in the TUS; see Appendix), we used only housework hours and caring time to estimate men's unpaid work.

We defined unpaid work (time spent on adult care or housework) of 25 hours or more as being full-time unpaid work, as this was the median number of hours spent on these activities (and excluding childcare) by people reporting they were in family care (97% of whom were female respondents). Based on their paid working hours (four categories defined above) and unpaid hours, male groups were then constructed as follows:

- 1) Full time paid work; less than full-time unpaid work
- 2) Long hours paid work; less than full-time unpaid work

- 3) Full time or long hours paid work; full-time unpaid work
- 4) Part time or no paid work; full-time unpaid work
- 5) Leisure rich (less than 30 hours on paid and unpaid work)
- 6) Full time education/training

We separated out those who are in full time education/training into a separate group, given this is a particular group who have chosen to invest in their human capital and therefore are likely to have different marginal utilities for work, housework and care

The distribution of the male time use groups are provided in Table 1. The majority of men fall in the first two groups, with full time or long hours of paid work and little or no unpaid work. Very few men appear to do unpaid work for more than 25 hours a week, so for the purpose of the regressions groups 3 and 4 were combined. The majority of men in the leisure rich group are retired (70%) or unemployed (15%).

Table 1 around here

Females. Females are more heterogonous than males with respect to the time spent in paid and unpaid work. We started by allocating women into four categories based on their working hours. Again full time work is defined in the BHPS as 30 hours or more, long hours for women are defined as 45 hours (the 75% percentile of full time employed women) as opposed to the 50 hours for men, since women on average do fewer hours than men. The work categories for women, similar to those for men, are as follows:

- 1) Full time work – 30 hours or more
- 2) Long hours – 45 hours or more (this is the 75% percentile for full time employed women)
- 3) Part time employed – less than 30 hours
- 4) Not employed

Unpaid work is much more prevalent for women. For women in family care the median is 25 hours with this increasing to 42 hours when including child care for those with children less than 16 years. Therefore we assumed that full time unpaid work should be anything over 30 hours (the equivalent of full time employment) including housework, caring and estimated child care. Based on paid and unpaid work hours women can be divided into the following groups:

- 1) Full time paid work; less than full-time unpaid work
- 2) Long hours paid work; less than full-time unpaid work
- 3) Full time or long hours paid work; full-time unpaid work
- 4) Combination of part time paid work and part-time unpaid work (total time greater than 30 hours per week)

- 5) No paid work; full-time unpaid work
- 6) Leisure rich (less than 30 hours in total on paid and unpaid work)
- 7) Full time education/training

Again we exclude anyone listed as sick/disabled from the female time use groups. The unemployed were kept in, and as for men a separate group was created for those in full time education or training.

The distribution of the female time use groups are provided in Table 2. Compared with men, here is a greater spread across groups for women, with the most popular group for women being the leisure rich group. 68% of females in the leisure rich group are retired; 6% are unemployed and 16% are in family care (of which 66% have no children). A much smaller proportion of women (32 % compared with 43% of men) are in full time paid work and only 9% of women do long hours of paid work (22% of men) . 4% of women are juggling full time unpaid work with a full time paid job. Most women doing unpaid work full time only do part-time paid work or do no work at all.

Table 2 around here

Table 3 shows the average hours per week spent on normal hours, extra hours, housework and caring for dependents for men and women in general, and by time use group. (Note that caring for dependents excludes childcare.) In general, women spend more than twice as much time on housework than men (15 hours per week, while men do 6 hours), even within the leisure rich group (13 hours compared with 7 hours). It seems that women whose time is unconstrained gain greater enjoyment or satisfaction from doing housework than men. Women’s average hours on paid work (17 hours) are significantly less than men’s (28 hours), reflecting the greater extent of part-time work amongst women. Women juggling full-time paid work with full-time unpaid responsibilities do on average 24 hours of housework and 11 hours of caring in addition to 35 hours of paid work per week. Men with full-time unpaid responsibilities do less paid work on average (14 hours, reflecting the combination of Groups 3 and 4 for men) but substantially more caring time (39 hours per week); this group may include men who have given up work in order to care for very sick spouses or dependents.

Table 3 around here

The effect of time use on life satisfaction

Our main aim is to compare life satisfaction models across time package groups to examine whether these groups have different marginal utilities across the different time uses (hours worked, housework and adult care). Respondents are asked in the BHPS from 1996 onwards ‘How satisfied or dissatisfied are you with your life overall?’, with answers on a seven point scale with 1 being not satisfied at all and 7 being completely satisfied. This question was not asked in the 2001 wave, so we exclude this year from our analysis. Although life satisfaction is measured on an ordinal scale we treat it as a continuous variable in order to allow for fixed effects. Ferrer-i-Carbonell and Frijters (2004) showed that whether the dependent variable is treated as continuous or an ordered variable makes little difference to results but controlling for fixed effects is important.

Table 3 shows average life satisfaction for men and women in general, and by time use group. In general people who do unpaid work on a full-time basis, spending many hours on housework and caring each week, are least satisfied, and people in the leisure rich groups are most satisfied. Women who do long hours of paid work (more than 50 hours per week including commuting time) are less satisfied than women working full time but less than 50 hours. This difference is not observed among men, with no difference in average satisfaction between the full-time and long hours groups.

We ran a set of panel fixed effects regressions on life satisfaction separately by gender and by time use group, as well as a regression across all respondents with time use groups included as dummies (but still split regressions by gender). Variables relating to personal characteristics included in the regressions are age, whether respondents live with a spouse or partner and if so whether the spouse/partner is employed, number of children, as well as the age of the youngest child, qualifications and socio-economic class. Income enters the regression through annual household income (adjusted for the number of adults in the household). The time use variables include hours of paid work, separated into normal hours and extra hours (overtime and second job hours), housework hours and time spent caring for elderly/sick adults or handicapped children. Care time enters the regression using the midpoint of each category (in order to obtain a marginal utility). In the leisure rich groups we also include indicators for being retired or unemployed. We also include wave dummies but these are not reported in the regression tables. A Hausman test of random effects versus fixed effects indicates that the fixed effects model is preferred to the random effects model

Table 4 around here

Males. Table 4 shows the results for men. In general life satisfaction is higher where men are over the age of fifty, living with a spouse, in excellent health and in the managerial or professional socio-economic groups. Life satisfaction declines with poor health. Relative to men in full-time paid jobs doing relatively little unpaid work (less than 25 hours per week), men in other groups are less satisfied (except those in full time education/training). This suggests men are on average happier when they are fulfilling stereotypical male roles of working full time with few responsibilities. Men are the least happy when they have full time responsibilities and do little or no paid work. For men, the marginal benefits of an additional hour of paid work, or extra work (in the form of overtime or a second job) are positive, while an additional hour of caring has a negative effect on life satisfaction.

Amongst those men doing paid work on a full-time basis, men in semi-routine or routine occupations are less satisfied than those in intermediate occupations. Younger men in this situation are more satisfied than those in the 35-49 age group, who may be at a life stage where they feel they want to be doing other things. In this group, satisfaction is lower for those with children in the 12-15 age group, relative to those with no children under 16. In the long hours group, satisfaction increases with education and with household income, suggesting that men with higher human capital, who are likely also to be in more knowledge-based jobs that offer higher discretion and greater levels of intrinsic reward, are generally happier with heavy workloads than those who may be working long hours out of necessity. Men in the leisure rich group are interesting. The whole sample regression shows that men in this group are less satisfied than men in conventional full-time paid work with part-time unpaid responsibilities. Men in intermediate socio-economic classes seem generally less happy with being leisure rich than other men, as are who are unemployed. The satisfaction of men in the leisure rich group increases with the number of children under 16 in the household, suggesting that they feel more comfortable about being out of the labour market if

they are doing so in order to look after children. Importantly, for men in this group, the marginal benefits of an additional hour of paid work are positive (as we saw for the sample as a whole), but so are the marginal benefits of an additional hour of housework. Leisure rich men appear to gain satisfaction from doing housework, in a way that other men do not.

Table 5 around here

Females. In general, life satisfaction is higher where women are over the age of 65, living with a spouse, more educated, in excellent health and with higher levels of household income. As for men, life satisfaction declines with poor health. Relative to women balancing part-time unpaid with part-time paid work, those in full-time paid jobs are less satisfied, and those in full time education/training are more satisfied. For women, the marginal benefits of an additional hour of paid work are positive, while an additional hour of caring, and an additional hour of paid work, has a negative effect on life satisfaction. This suggests that, unlike men, women are in general averse to taking on overtime or second jobs, presumably preferring to use that time at home in leisure pursuits or with children.

In the long hours group, women in the 25-34 age group are more satisfied than those in the 35-49 age group. The younger women, perhaps more likely to be in the establishment stage of their career, appear to be more willing to tolerate long hours. Satisfaction increases with household income, suggesting that the greater earnings associated with working long hours offer a form of compensation for women. In this group, marginal benefits of an additional hour of paid work are negative; women working long hours are not keen to do more of it. For women doing full-time paid work, satisfaction decreases with the number of children in the household; with each additional child the demands on a female adult in the household appear to increase. However women in this group with children in the 0-2 and 5-11 ranges are more satisfied, suggesting that the toddler and pre-school ages and early teenagers are particularly demanding. For this group, marginal effect of an additional hour of extra work (overtime or a second job) is negative; for women already stretched by full-time paid work, extra hours are an unwelcome burden.

In the group of women doing part-time paid and unpaid work, younger women are generally happier than those in the 35-49 age group. As before women in this group with children in the 0-2 and 5-11 ranges are more satisfied, suggesting that the toddler and pre-school ages and early teenagers are particularly demanding. For this group, the marginal effect of an additional hour spent caring is negative, while for those doing full-time unpaid work, the marginal effect of additional hours spent caring and spent on housework is negative. As found with men, leisure rich women gain satisfaction from an additional hour of housework, and from extra hours worked.

Conclusion

Taken together, these findings suggest that policy initiatives intended to help working families reallocate their time may not have the anticipated effects. For example, tax breaks on childcare are expected to encourage more women into work. In fact, women are in general less satisfied by taking on overtime or second jobs, presumably preferring to use that discretionary time at home in leisure pursuits or with children. For women doing full-time paid work, the marginal effect of an additional hour of extra work (overtime or a second job) is negative; for women already stretched by full-time paid work, extra hours are an unwelcome burden. More importantly, more effort needs to be put in addressing the gender roles and expectations that lead to such stark specialisations in time use and the consequent

difficulties encountered in attempting to direct society towards a more balanced distribution of activities between women and men.

References

- Antonopoulos, R. (2008) .The Unpaid Care Work-Paid Work Connection., Working Paper No. 541 The Levy Economics Institute Bard College.
- Brandon, Peter D. (1999) .Income-Pooling Arrangements, Economic Constraints, And Married Mothers' Child Care Choices., Journal of Family Issues, 20(3), 350 .
- Brewer, M, M. Francesconi, P. Gregg and J. Grogger (2009) Feature: In work benefit reform in a cross-national perspective Economic Journal, 119, 535, 19 F1-F14.
- Burchardt, T. (2008) Time and income poverty, Case Report 57 London School of Economics
- Burda, Michael Burda, Daniel S. Hamermesh and Philippe Weil (2007) Total Work, Gender and Social Norms
- Cohen, Philip N. 1998. .Replacing Housework in the Service Economy: Gender, Class, and Race-Ethnicity in Service Spending. Gender and Society 12(2): 219, 31.
- Ermish, J and M. Francesconi (2001) The effect of parents' employment on outcomes for children, The Policy Press and the Joseph Rowntree Foundation
- Gregg, P., S. Harkness and S. Smith (2009) Welfare reform and lone parents in the UK, Economic Journal, 119, 535, F38-F65.
- Hersch, Joni, Home production and wages: evidence from the American Time Use Survey Review of Economics of the Household Volume 7, Number 2 / June, 2009
- Feyrer, James, Bruce Sacerdote & Ariel Dora Stern, 2008. "Will the Stork Return to Europe and Japan? Understanding Fertility within Developed Nations," Journal of Economic Perspectives, American Economic Association, vol. 22(3), pages 3-22, Summer.
- Fobre, N. Children as Public Goods The American Economic Review, Vol. 84, No. 2, Papers and Proceedings of the Hundred and Sixth Annual Meeting of the American Economic Association (May, 1994), pp. 86 -90
- Joshi, H. E. Cooksey, G. Verropoulou, E. Menaghan and N. Tzavidis Children of working mothers: Does mother.s employment affect children's development Economics Seminar Reading December 2008
- Folbre Nancy and Julie A. Nelson For Love or Money. Or Both? Journal of Economic Perspectives. Volume 14, Number 4. Fall 2000. Pages 123.140
- Folbre, Nancy , Jayoung Yoon, Kade Finnoff and Allison Sidle Fuligni By What Measure? Family Time Devoted to Children in the U.S. Working Paper 2004-06 University of Massachusetts Amherst
- Grogger, J. and L.A.Karoly (2009) The effects of work-conditioned transfers on marriage and child well-being: a review Economic Journal, 119, 535, F15-F37.

Gupta, S. and M. Ash (2008) Whose Money, Whose Time? A Nonparametric Approach to Modeling Time Spent on Housework in the United States *Feminist Economics* 14(1), January 2008, 93-120

Gupta, S. 2006. Her Money, Her Time: Women's Earnings and Their Housework Hours..

Social Science Research 35(4): 975-99.

Kalenkoski, Charlene M., David C. Ribar and Leslie S. Stratton The Influence of Wages on Parents' Allocations of Time to Child Care and Market Work in the United Kingdom *IZA Discussion Paper* 243620

James, O. (2008) Family under the microscope, *The Guardian, Family Supplement*, 7.3.09

La Valle, Ivana, Sue Arthur, Christine Millward, James Scott with Marion Clayden (2002) *Happy families? Atypical work and its influence on family life* The Policy Press and the Joseph Rowntree Foundation

MacDonald, Martha, Shelley Phipps, and Lynn Lethbridge Taking Its Toll: The Influence of Paid and Unpaid Work on Women's Well-Being *Feminist Economics* 11(1), March 2005, 63-94

Mattingly, Marybeth, J. and Suzanne M. Bianchi Gender Differences in the Quantity and Quality of Free Time: The U.S. Experience *Social Forces* – Volume 81, Number 3, March 2003, pp. 999-1030

Phipps, Shelley A. and Peter S. Burton. 1998. What's Mine is Yours? The Influence of

Male and Female Earnings on Patterns of Household Expenditure.. *Economica* 65(260): 599-613.

Waldfoegel, J. (2007) Welfare reforms and child well-being in the US and UK. Centre for the Analysis of Social Exclusion Paper 126, London School of Economics

Tables

Table 1: Distribution of male time use groups in the BHPS

Male time use group	N	%
FT work; PT unpaid work.	29,185	41.32
Long work; PT unpaid work.	15,349	21.73
FT/long work; FT unpaid work	1,079	1.53
PT or no work; FT unpaid work	2,429	3.44
Leisure rich	18,543	26.25
FT education/training	4,047	5.73
Total	70,632	100

Source: British Household Panel Survey; panel dataset 1996-2007

Table 2: Distribution of female time use groups in the BHPS

Female group	N	%
FT work; PT unpaid work.	19,479	22.84
Long work; PT unpaid work.	7,556	8.86
FT/long work; FT unpaid work	3,339	3.91
PT paid work; PT unpaid work	13,828	16.21
PT or no work; FT unpaid work	11,495	13.48
Leisure rich	24,521	28.75
FT education/training	5,079	5.95
Total	85,297	100

Source: British Household Panel Survey; panel dataset 1996-2007

Table 3: Average Time Use and Life Satisfaction by Gender and Time Use Group

	N	Time Use - Mean Hours per Week				Mean Life satisfaction
		Normal hours worked	Extra hours worked	Housework hours	Caring (mid point)	
Males	58,683	27.96	3.21	5.73	2.42	5.29
FT work; PT unpaid work.	24,512	38.19	2.49	4.80	0.46	5.25
Long work; PT unpaid work.	12,714	48.17	8.97	4.17	0.45	5.25
FT unpaid work	2,877	14.13	1.63	18.64	39.37	5.18
Leisure rich	15,187	2.11	0.30	6.61	0.67	5.40
FT education/training	3,393	5.75	1.16	3.34	0.46	5.38
Females	70,690	16.73	1.80	14.92	3.53	5.28
FT work; PT unpaid work.	16,370	35.08	2.02	9.92	0.55	5.25
Long work; PT unpaid work	6,357	40.93	9.18	8.57	0.61	5.18
FT paid work; FT unpaid work	2,741	35.21	3.74	23.36	11.22	5.15
PT paid work; PT unpaid work	11,580	17.47	1.43	19.55	3.40	5.30
PT or no work; FT unpaid work	9,356			29.08	16.19	5.16
Leisure rich	20,064	1.18	0.13	12.60	0.59	5.39
Full time education/training	4,222	6.07	1.54	5.30	0.84	5.29

Table 4: Fixed Effects Life satisfaction regression by Male Time Use Group

	All	FT work; PT unpaid work.	Long work; PT unpaid work.	FT unpaid work	Leisure rich	Full time education/ training
Age group (ref: 35-49)						
16-24	0.024 [0.035]	0.033 [0.046]	0.099 [0.075]	1.290*** [0.489]	0.088 [0.166]	0.709 [0.487]
25-34	0.014 [0.022]	0.025 [0.028]	-0.01 [0.040]	0.729*** [0.232]	-0.056 [0.117]	0.455 [0.437]
50-64	0.120*** [0.024]	0.137*** [0.031]	0.057 [0.046]	0.08 [0.147]	0.092 [0.126]	0.577 [0.589]
65+	0.297*** [0.039]	0.352*** [0.105]	0.324** [0.149]	0.238 [0.237]	0.193 [0.135]	
Live with spouse	0.226*** [0.023]	0.183*** [0.035]	0.305*** [0.052]	-0.042 [0.157]	0.253*** [0.062]	-0.096 [0.284]
Spouse employed	0.01 [0.017]	0.015 [0.025]	0.023 [0.033]	0.183 [0.146]	-0.018 [0.046]	0.323 [0.316]
No of children under 16	-0.001 [0.014]	-0.002 [0.019]	-0.04 [0.026]	0.055 [0.098]	0.128** [0.058]	0.11 [0.328]
Age of youngest child (ref: no child under 16)						
Aged 0-2	0.007 [0.031]	0.092** [0.041]	-0.024 [0.060]	0.051 [0.310]	-0.183 [0.149]	-0.785 [0.806]
Aged 3-4	-0.023 [0.033]	0.067 [0.044]	0.015 [0.062]	-0.444 [0.284]	-0.225 [0.156]	0.138 [0.633]
Aged 5-11	0.002 [0.030]	0.062 [0.040]	0.025 [0.057]	-0.168 [0.226]	-0.053 [0.131]	-0.066 [0.200]
Aged 12-15	-0.037 [0.027]	0.032 [0.036]	-0.011 [0.050]	-0.459** [0.193]	-0.121 [0.128]	-0.442 [0.629]
Qualifications (ref: no/missing qualifications)						
First degree or higher	-0.028 [0.059]	0.058 [0.109]	0.303* [0.176]	-0.851 [1.050]	-0.333 [0.355]	0.078 [0.179]
Other higher	0.063 [0.041]	0.035 [0.070]	0.182* [0.110]	0.189 [0.257]	0.053 [0.163]	0.02 [0.135]
A levels	0.045 [0.045]	0.04 [0.078]	0.19 [0.122]	-0.171 [0.456]	0.01 [0.230]	0.027 [0.104]
Higher grade GCSE/O Levels	0.107** [0.043]	0.129* [0.078]	0.244* [0.126]	-0.118 [0.384]	-0.228 [0.221]	-0.015 [0.090]
Other GCSE/CSE	-0.048 [0.067]	-0.091 [0.109]	0.175 [0.165]		0.035 [0.279]	0.008 [0.201]
Other qualifications	0.268** [0.104]	0.191 [0.150]	0.304 [0.252]	0.296 [0.562]	0.205 [0.352]	0.385 [0.807]
Log(Household Income per capita)	0.009 [0.006]	0.019 [0.013]	0.051*** [0.015]	0.002 [0.054]	-0.002 [0.015]	-0.01 [0.013]

Normal hours worked	0.002***	0.0003	-0.002	-0.002	0.009**	0.003
	[0.001]	[0.002]	[0.001]	[0.003]	[0.004]	[0.003]
Extra hours worked	0.004***	0.002	0.0001	0.002	0.0001	-0.004
	[0.001]	[0.002]	[0.001]	[0.008]	[0.007]	[0.006]
Care hours (mid point)	-0.001**	-0.004	0.001	-0.001	0.005	0.009
	[0.001]	[0.004]	[0.006]	[0.001]	[0.004]	[0.012]
Housework hours	0.001	-0.002	0.003	-0.004	0.008***	-0.002
	[0.001]	[0.002]	[0.003]	[0.003]	[0.002]	[0.007]
Health Status (ref: Good)						
Excellent	0.120***	0.111***	0.094***	0.176**	0.096***	0.119**
	[0.011]	[0.016]	[0.024]	[0.085]	[0.031]	[0.055]
Fair	-0.208***	-0.197***	-0.173***	-0.089	-0.196***	-0.276***
	[0.011]	[0.017]	[0.026]	[0.068]	[0.025]	[0.068]
Poor	-0.540***	-0.466***	-0.319***	-0.277***	-0.592***	-0.314***
	[0.019]	[0.031]	[0.051]	[0.107]	[0.038]	[0.139]
Social Economic Class (ref: intermediate)						
Managerial and professional	0.041*	0.04	0.001	-0.102	0.207***	0.028
	[0.021]	[0.026]	[0.061]	[0.216]	[0.073]	[0.155]
Small employers and own account	0.031	-0.059	0.012	0.002	0.355**	0.564
	[0.042]	[0.074]	[0.080]	[0.351]	[0.143]	[0.889]
Lower supervisory and technical	-0.012	-0.019	-0.05	-0.348	0.105	0.013
	[0.024]	[0.032]	[0.067]	[0.233]	[0.075]	[0.159]
Semi routine/routine	-0.028	-0.080**	-0.1	-0.341	0.184**	-0.002
	[0.024]	[0.032]	[0.070]	[0.229]	[0.073]	[0.114]
Never worked	0.091*			-1.523**	0.368***	0.141
	[0.049]			[0.663]	[0.124]	[0.145]
Missing	0.027	-0.06	0.172	-0.427*	0.143*	0.131
	[0.029]	[0.164]	[0.250]	[0.235]	[0.079]	[0.146]
Male group (ref: FT work; part time unpaid.)						
Long work; PT unpaid	-0.052***					
	[0.015]					
FT unpaid work	-0.061*					
	[0.033]					
Leisure rich	-0.050**					
	[0.025]					
Full time education/training	0.166***					
	[0.035]					
Retired					0.044	
					[0.065]	
Unemployed					-0.204***	
					[0.068]	
Constant	4.976***	4.917***	4.519***	5.527***	5.104***	5.014***
	[0.076]	[0.164]	[0.203]	[0.585]	[0.219]	[0.540]
Observations	58,674	24,511	12,713	2,877	15,180	3,393
Number of individuals	10,085	6,081	3,939	1,327	4,248	1,493

R-squared	0.03	0.03	0.03	0.05	0.04	0.04
r-squared within	0.034	0.032	0.027	0.051	0.045	0.040
r-squared between	0.151	0.077	0.035	0.017	0.178	0.046
r-squared overall	0.100	0.073	0.032	0.032	0.149	0.038

Standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1, Includes wave dummies

Table 5: Fixed Effects Life satisfaction regression by Female Time Use Group

	All	FT work; PT unpaid work.	Long work; PT unpaid work.	FT paid work; FT unpaid work	PT paid work; PT unpaid work	PT or no work; FT unpaid work	Leisure Rich	Full time education/ training
Age group (ref: 35-49)								
16-24	-0.009 [0.035]	0.096 [0.064]	0.141 [0.103]	-0.449 [0.313]	0.282*** [0.099]	-0.011 [0.123]	-0.203 [0.183]	-0.202 [0.376]
25-34	0.004 [0.021]	0.024 [0.041]	0.123* [0.069]	0.024 [0.127]	0.092** [0.041]	-0.032 [0.069]	-0.079 [0.125]	0.238 [0.309]
50-64	0.03 [0.024]	0.011 [0.040]	0.068 [0.069]	0.076 [0.155]	-0.045 [0.050]	-0.007 [0.100]	0.088 [0.084]	1.571** [0.681]
65+	0.091** [0.038]	0.294 [0.230]	-0.66 [0.424]		0.157 [0.138]	0.088 [0.138]	0.190** [0.095]	
Live with spouse	0.244*** [0.023]	0.101* [0.056]	0.007 [0.090]	-0.143 [0.251]	0.149** [0.071]	0.155* [0.079]	0.433*** [0.054]	-0.02 [0.187]
Spouse employed	0.009 [0.020]	0.086* [0.049]	0.089 [0.078]	0.035 [0.189]	0.140*** [0.051]	0.063 [0.064]	-0.002 [0.049]	0.288 [0.218]
No of children under 16	-0.02 [0.014]	0.036 [0.038]	0.016 [0.067]	-0.133* [0.070]	-0.025 [0.027]	0.002 [0.033]	-0.04 [0.075]	-0.125 [0.215]
Age of youngest child (ref: no child under 16)								
Aged 0-2	0.02 [0.032]	-0.02 [0.076]	-0.112 [0.145]	0.486** [0.217]	0.212** [0.085]	0.034 [0.141]	-0.186 [0.197]	0.315 [0.327]
Aged 3-4	-0.046 [0.033]	-0.087 [0.079]	-0.159 [0.153]	0.351 [0.216]	0.097 [0.082]	0.029 [0.138]	0.002 [0.171]	0.701** [0.288]
Aged 5-11	0.012 [0.029]	-0.059 [0.070]	-0.102 [0.130]	0.429** [0.187]	0.142** [0.072]	-0.013 [0.123]	0.163 [0.139]	0.461** [0.205]
Aged 12-15	-0.016 [0.026]	-0.044 [0.056]	-0.06 [0.100]	0.158 [0.165]	0.056 [0.056]	-0.114 [0.106]	0.17 [0.122]	0.286 [0.386]
Qualifications (ref: no/missing qualifications)								
First degree or higher	0.096* [0.057]	0.274** [0.125]	0.116 [0.226]	-0.613 [0.528]	-0.213 [0.193]	0.297 [0.627]	-0.076 [0.385]	0.082 [0.178]
Other higher	0.048 [0.042]	0.077 [0.091]	0.233 [0.190]	-0.42 [0.359]	-0.053 [0.106]	0.013 [0.180]	-0.178 [0.165]	0.055 [0.131]
A levels	0.082* [0.045]	0.075 [0.096]	0.475** [0.206]	-0.209 [0.434]	0.001 [0.125]	0.094 [0.272]	-0.147 [0.234]	0.029 [0.102]
Higher grade GCSE/O Levels	0.0003 [0.043]	0.009 [0.098]	0.366* [0.214]	-0.742* [0.408]	-0.09 [0.113]	-0.064 [0.195]	-0.202 [0.186]	-0.004 [0.087]
Other GCSE/CSE	-0.048 [0.065]	0.008 [0.162]	0.497* [0.291]	-0.346 [0.488]	-0.025 [0.150]	-0.293 [0.353]	-0.511** [0.257]	0.181 [0.184]
Other qualifications	-0.009 [0.157]	0.18 [0.296]	-0.201 [0.697]	-1.066 [0.798]	-0.086 [0.372]	0.046 [0.582]	1.088 [0.824]	0.02 [0.446]
Log(Household Income per capita)	0.013** [0.006]	0.009 [0.019]	0.048** [0.023]	-0.039 [0.086]	0.007 [0.020]	-0.032 [0.028]	0.008 [0.014]	0.015 [0.014]
Normal hours worked	0.002* [0.002]	0.001 [0.001]	-0.006** [0.001]	-0.001 [0.001]	0.002 [0.002]		0.002 [0.002]	0.001 [0.001]

	[0.001]	[0.003]	[0.002]	[0.006]	[0.002]		[0.004]	[0.003]
Extra hours worked	-0.003***	0.0002	-0.003	-0.011*	-0.004		0.028**	0.003
	[0.001]	[0.003]	[0.002]	[0.006]	[0.004]		[0.012]	[0.005]
Care hours (mid point)	-0.003***	-0.008*	0.0001	0.0001	-0.002**	-0.002***	0.003	0.014**
	[0.000]	[0.005]	[0.008]	[0.002]	[0.001]	[0.001]	[0.005]	[0.006]
Housework hours	0.001	-0.002	0.0003	-0.002	0.001	-0.003**	0.008***	-0.001
	[0.001]	[0.002]	[0.004]	[0.004]	[0.001]	[0.001]	[0.002]	[0.005]
Health Status (ref: Good)								
Excellent	0.151***	0.129***	0.175***	0.113	0.164***	0.180***	0.072**	0.260***
	[0.012]	[0.022]	[0.036]	[0.079]	[0.027]	[0.045]	[0.031]	[0.052]
Fair	-0.214***	-0.240***	-0.242***	-0.210***	-0.173***	-0.226***	-0.158***	-0.277***
	[0.011]	[0.023]	[0.039]	[0.074]	[0.027]	[0.036]	[0.023]	[0.060]
Poor	-0.536***	-0.548***	-0.491***	-0.413***	-0.384***	-0.503***	-0.518***	-0.546***
	[0.017]	[0.039]	[0.064]	[0.123]	[0.048]	[0.054]	[0.033]	[0.099]
Social Economic Class (ref: intermediate)								
Managerial and professional	-0.008	-0.028	0.088	0.073	0.026	-0.101	-0.05	0.164
	[0.018]	[0.027]	[0.058]	[0.110]	[0.044]	[0.128]	[0.063]	[0.144]
Small employers and own account	0.023	-0.111	0.089	0.897***	0.025	-0.513	-0.075	
	[0.056]	[0.151]	[0.126]	[0.315]	[0.159]	[0.323]	[0.152]	
Lower supervisory and technical	-0.033	-0.036	0.075	0.318**	-0.04	-0.104	-0.079	-0.069
	[0.024]	[0.046]	[0.084]	[0.153]	[0.051]	[0.135]	[0.072]	[0.150]
Semi routine/routine	0.007	0.023	0.034	0.149	-0.023	0.078	-0.029	0.104
	[0.018]	[0.036]	[0.079]	[0.132]	[0.041]	[0.104]	[0.055]	[0.098]
Never worked	0.056				0.547	-0.109	0.104	0.01
	[0.047]				[0.618]	[0.241]	[0.115]	[0.130]
Missing	-0.063**	0.059	0.002		0.556**	-0.061	-0.066	-0.054
	[0.025]	[0.248]	[0.385]		[0.283]	[0.106]	[0.061]	[0.139]
Female group (ref : PT paid work; PT unpaid work)								
FT work; PT unpaid work.	-0.041*							
	[0.022]							
Long work; PT unpaid work	-0.047							
	[0.031]							
FT paid work; FT unpaid work	-0.018							
	[0.029]							
PT or no paid work; FT unpaid work	-0.038							
	[0.023]							
Leisure rich	-0.034							
	[0.022]							
Full time education/training	0.119***							
	[0.032]							
Retired							0.053	
Unemployed							[0.037]	
							-0.154**	
							[0.065]	

Constant	5.074*** [0.074]	4.981*** [0.225]	4.518*** [0.314]	6.115*** [0.871]	4.871*** [0.218]	5.622*** [0.306]	5.227*** [0.179]	5.337*** [0.422]
Observations	70,669	16,365	6,355	2,741	11,575	9,354	20,057	4,222
Number of individuals	11,924	5,009	2,485	1,503	3,571	3,405	5,486	1,899
R-squared	0.03	0.04	0.04	0.05	0.03	0.03	0.04	0.05
r-squared within	0.0324	0.0354	0.044	0.0483	0.0288	0.0347	0.0393	0.0522
r-squared between	0.147	0.0908	0.0609	0.0188	0.0775	0.103	0.123	0.00726
r-squared overall	0.0932	0.0889	0.0561	0.02	0.0751	0.0967	0.0944	0.0207

Standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1, Includes wave dummies

APPENDIX

The Time Use Survey (TUS) was undertaken in 2000 and asked respondents to record their time use in 10 minute slots for one weekday and weekend day, along with an individual and household questionnaire to gather more general social and economic variables. The underlying characteristics of the individuals in the TUS are very similar to those in the 2000 wave of the BHPS, as shown in Table A1, which compares the full sample and those with children under 16. The main differences between the two surveys relate to regions with the BHPS having a wider coverage of Scotland, Wales and Northern Ireland, and also socio-economic class. 29% of the TUS have children and 30% in the BHPS, with respondents in the BHPS tending to have on average more children aged 3-4 and less children of other ages.

Table A1: Comparison of the average characteristics of the TUS and BHPS

	WITH CHILDREN		ALL	
	TUS	BHPS (year 2000)	TUS	BHPS (year 2000)
<i>No of obs.</i>	2466	4448	8119	15081
Females	0.58	0.58	0.54	0.54
Age	37.30	36.49	45.00	45.17
White	0.93	0.96	0.96	0.97
Live with spouse/partner	0.84	0.86	0.64	0.64
Region				
North East	0.04	0.04	0.04	0.04
North West	0.11	0.07	0.11	0.07
Yorkshire and the Humber	0.09	0.06	0.10	0.06
East Midlands	0.09	0.07	0.09	0.06
West Midlands	0.09	0.06	0.08	0.06
East of England	0.12	0.03	0.10	0.03
London	0.08	0.05	0.08	0.06
South East	0.13	0.12	0.13	0.12
South West	0.09	0.06	0.09	0.06
Wales	0.04	0.20	0.05	0.19
Scotland	0.10	0.23	0.11	0.23
Northern Ireland	0.03	0.01	0.02	0.01
Socio-economic class				
Managerial & professional	0.33	0.29	0.30	0.28
Intermediate	0.14	0.14	0.13	0.14
Small employers & own account workers	0.08	0.03	0.07	0.02
Lower supervisory & technical	0.08	0.18	0.08	0.17

semi-routine & routine	0.29	0.33	0.28	0.35
Never worked	0.05	0.02	0.07	0.03
Not-classifiable (eg students, missing)	0.03	0.01	0.07	0.02
Economic activity				
Full time employed	0.52	0.54	0.45	0.45
Part time employed	0.25	0.21	0.17	0.14
Unemployed	0.02	0.04	0.02	0.04
Retired	0.01	0.00	0.19	0.21
Family care/other	0.15	0.17	0.13	0.11
Sick	0.02	0.03	0.04	0.04
Have children under 16			0.30	0.29
Number of children				
Aged 0-2	0.29	0.25	0.09	0.08
Aged 3-4	0.20	0.22	0.06	0.07
Aged 5-11	0.83	0.79	0.25	0.26
Aged 12-15	0.48	0.45	0.15	0.18

Time use in the TUS is defined at both a broad and finer level. We focus on a broader measure of childcare which only includes that listed as a primary activity, and is measured as minutes per day (one record for a weekday and one for a weekend day). Child care is defined as childcare of own household members, which covers: physical care and supervision; teaching the child; reading, playing and talking with child; accompanying the child and other specified childcare. We also include childcare related activities defined under the travel section: travel escorting to/from education and travel escorting a child other than education.

We then performed an OLS regression of daily child care reported in the TUS, using variables that were both in the TUS and the BHPS as predictors. We then used these coefficients to estimate child care hours in the BHPS. We performed these regressions separately by gender and for weekday/weekends. Especially as females on average do more than men, with women doing on average 118 minutes on a weekday and 86 minutes on a weekend and men 42 minutes on a weekday and 51 minutes on a weekend. The coefficients from these regressions are reported in Table A2. We included an indicator of whether they lived with a spouse/partner and whether the spouse/partner was employed. However, almost all men (93%) who undertook child care were living with a partner so this variable was not included in the male regressions. The biggest factors that affect the time spent on child care are the number of children of particular ages and hours worked, with squared terms included for these variables to allow for non-linear effects. The female models are better predictors than the male models with a correlation of the predicted values and actual values of 0.64 (0.60 at weekends) but only 0.32 (0.47 at weekends) for men. The r-squared values are better for women, with the weekend model better than the weekday model for men.

Table A2: OLS regression of childcare (minutes per day) using the TUS

	Female - weekday	Female - weekend	Male - weekday	Male - weekend
Live with spouse/partner	-18.82* [10.14]	-5.88 [8.61]		
Spouse/partner employed	22.27** [9.53]	10.76 [8.30]	7.18 [4.98]	11.77** [5.77]
No of children aged 0-2	126.14*** [20.49]	130.84*** [17.54]	43.24*** [16.16]	66.12*** [19.29]
No of children aged 3-4	74.07*** [20.19]	36.25* [19.19]	27.81* [15.11]	58.21*** [17.82]
No of children aged 5-11	32.26*** [7.21]	5.03 [7.27]	14.92** [7.16]	-1.29 [7.42]
No of children aged 12-15	-25.86*** [8.22]	-28.87*** [7.94]	-11.79 [8.97]	26.37*** [10.03]
No of children aged 0-2 squared	-15.06 [14.65]	-20.93* [12.41]	-7.14 [11.77]	-6.03 [13.18]
No of children aged 3-4 squared	-22.47 [15.23]	-14.14 [15.41]	-19.17* [10.80]	33.22*** [12.52]
No of children aged 5-11 squared	-6.31*** [2.38]	1.01 [2.54]	-3.01 [2.56]	3.36 [3.19]
No of children aged 12-15 squared	5.37* [3.04]	6.26** [2.76]	4.48 [4.22]	7.99** [3.56]
Total hours worked	-1.56*** [0.22]	-0.43** [0.21]	-0.85*** [0.27]	-0.38 [0.28]
Total hours worked squared	0.01*** [0.002]	0.005*** [0.002]	0.005** [0.002]	0.001 [0.002]
Managerial and professional			7.21* [4.23]	15.67*** [5.00]
Constant	88.83*** [8.88]	57.06*** [8.14]	44.83*** [11.62]	30.49** [13.30]
Observations	1155	1155	795	795
R-squared	0.41	0.36	0.1	0.22

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

We used the coefficients from these regressions to predict minutes per day of child care for individuals with children under 16 in the BHPS, estimating a value for a weekday and a value for a weekend day. To convert to a weekly total we multiplied the weekday value by 5 and added it to twice the weekend value. It should be noted that our estimates of child care were intended to help divide individuals into groups rather than to be used in our estimations of life satisfaction.