

Specialization or Gender Roles: The Effect of Different Paid Work Models on The Division of Household Labor.

Abstract: Despite greater equality in public life, the home remains a bastion of gender stratification, especially in the division of household labor. This paper looks at how two different employment arrangements in the household affect patterns of the division of household labor. The first involves gender roles and is operationalized through overlap of shifts, based on Harriet Presser's prior work in the subject. The second is based on Gary Becker's specialization thesis and is operationalized through which partner works more. Both theses are analyzed using the UK 2000 Time Use Data, with five major findings presented in the text. The first is that a gender gap remains in the amount and type of work done in the household, with women doing more unpaid labor in the home. Second, the distribution of work schedules for the UK is calculated using 7-day work diaries for the first time, adding interesting and useful information to a growing body of research on the 24-hour work force. The third major finding is that a model based on variations shift work (derived from Presser, 2003) fits the data. The fourth and most important finding is that a model based on which partner works more better explains the division of household labor. Finally, the two models are found to work slightly better when integrated, opening up many avenues for future research. The research presented in this paper will be useful in helping alleviate stratification in the household as it points to what circumstances foster a more equitable division of labor in the home.

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NOT FOR CITATION

1. Introduction

Despite gains in equality in the workplace, the division of labor remains an arena for lingering stratification in the amount and type of household tasks performed by partners in married couples. This project uses 2000/1 UK Time Use Data to establish if a significant gap in housework exists by gender in dual-earner British couples. It then measures the work patterns of these couples, and uses that data to analyze two differing theories of how differences in paid work affects the household division of labor.

This paper begins with a discussion of major theories surrounding the gender gap in household labor and the pattern of work scheduling in the UK (section 2). The first is centered on the assignment of women's roles. This includes theories of gender roles (Major, 1993; Hochschild, 1994) resource gaps and gender identification (Coverman, 1988). The second set of theories is concerned with the specialization hypothesis (Becker, 1981). This literature review and discussion is followed by a description of the data set and methodology used to address this question (section 3).

The next section presents the first major finding- that a gap in household labor still exists in the UK, though it has shrunk over time similar to the gap in the US. This fourth section of the paper also maps the schedules of the UK population, and finds that UK arrangements differ from those in the US. This is the second major finding, because it is the first time 7-day work diaries have been combined with questionnaire data to map schedule distribution in the UK. This finding also opens up future avenues for research into both the feminization of the labor market and integration of gaps in household labor. The fourth section also operationalizes the two theoretical

hypothesis to test the gender gap in housework using bivariate analysis. This is performed without controls, and provides a point of departure to begin the section on modeling.

The fifth section tests the two main hypothesis with the addition of control variables for alternative hypothesis including human capital, class and life course differences. These models show that both hypothesis are partially supported, with the specialization model fitting the data better. Aside from that finding the other major finding is that the two independent variables for paid work fit the data only slightly better when used together in a model. This suggests future areas for research and theory which are included in the discussion.

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2. Literature Review

There is a substantial body of research on the division of labor in the household. The ubiquitous finding is that women do a greater share of the housework no matter the employment arrangements. It is also known that tasks are gendered, with women's tasks taking more time (cf. Coltrane, 2000). The major research question is thus not *if* there is a division of labor in the household, but *how* does it vary between households. This is a crucial question because only by finding variations in the patterns of the division of household labor can factors leading to a more equitable division be identified and more widely adopted.

2.1 Prior Research

The research presented below integrates different traditions of research on the work-life balance. The first is Presser's substantial body of work, which culminates in *Working in a 24/7 Economy* (2003). This forms the basis of the categorizations used in this paper, especially the classification of scheduling. Presser's work is important as it is becoming a standard reference for studies of the 24/7 economy and has worked to bring the topic to the attention of academics and policy makers. Her work is based in questions of gender relations and expectations, and she cites three hypothesis, centering on a resource gap, traditionalism of sex role attitudes, and lack available time-- all three being inversely related to the amount of housework done (Presser, 2003). This paper looks at the second and third issues the most. Traditionalism of roles stresses desynchronization and attunement to gender roles and both are operationalized through the overlap of shifts. The former is obvious, and the latter comes from research stating that men perform more work when they are home without their wives (Hochschild, 1997).

Coltrane (2000) lays out similar the central tenets of household labor research in his meta-analysis of division of household labor studies in the 1990s. These theories echo Presser as centering on relative resources, socialization-gender role attitudes and time availability-constraints. He further notes that human capital is operationalized through control variables for education while class can reflect resource-bargaining power. All of these factors are considered in the models used below.

A gendered view of the household is based on the theory that wives do more housework because they do female tasks, which are more plentiful and take longer. These theories rest on learned behaviors in the home and societal categorization in the wider world. Hochschild (1989) describes the second shift that wives in dual-earner relationships endure. Her ethnographic work highlights the situations at a household level which create this phenomena. Again and again an underlying reason comes down to fulfilling expectations learned in the household. It is exactly these expectations that Major (1993) discusses as gender differences in comparison to standards. There are clear normative, feasibility and self (habitual) comparisons that propagate the divisions of household labor. This is also considered by West and Zimmerman (1987) who discuss gender as both a biological and social construction. This all leads to the idea that women do women's work, and more work, in the home because it is expected and that is how it has always been done.

Gershuny *et. al.* (2005) and Breen and Cooke (2005) both look at the changes in the division of household labor over time. Gershuny and his coauthors find a "lagged adaptation" in the division of household labor following changes in the patterns of

paid labor. Breen and Cooke find that more equitable divisions of labor in the household result in large part for a willingness of the male partner to adapt. This latter idea is partially tested below with the inclusion of a gender identification scale that measures an individual's willingness to perform different tasks.

The role of Becker's (1981) theories on the efficiency of a division of labor in the household are central to the argument that a gap in human capital makes an imbalance of housework desirable to the household. It also purports that specialization is beneficial to the household, and in classical economic terms the stratification in the household should break down as the number of work hours are equalized. The research below will show that this model fits the data better, as the gap narrows but does not disappear for dual earner couples.

2.2 Time Use Studies

The work-life balance has been a popular study for people using time use data for decades. From the first major studies (Szalai, 1972; Young and Wilmot, 1973) the balance of different activities has been studied by looking at the whole day. Time, of course, is a truly zero sum game when taken on the micro level, and while some multi-tasking can be accomplished (such as checking personal e-mail at work) the balance of paid work and house work can not be multi-tasked unless working from home is considered (which it is not in most of the studies cited as well as in this one). As will be seen later in this paper, time use estimates are consistently lower than questionnaire estimates for time spent on housework. These estimates are consistent with older UK and US time-use estimates (Gershuny and Robinson, 1998; Bianchi *et al.*, 2000). This is also consistent with the measurement gap discussed by Robinson

and Gershuny (1994). Robinson and Bostrom (1994) further discuss the overestimation of the workweek by survey methods at length, coming to the conclusion that people are either ‘blocking’ (my term) out the time to include breaks and commuting time, or overestimating for social reasons (acceptance, the cult of busyness). This would help explain some of the variation the housework estimates as well, as it is highly conceivable that a respondent would lump the time spent even on the individual process of cooking, eating, doing the dishes and cleaning to include a fair amount of non-active time (i.e. the interruption of a phone call, or a break to listen to the radio or watch TV). The time diaries provide a smaller unit of measurement which allows more detailed analysis and allows for a more accurate summation by researchers, rather than a single summation of a week’s activity by the respondent¹. One of the contributions the research below makes is in adding to the accurate information available from time use studies into both work schedules and household labor. The following two sub sections lay out the main hypotheses tested below and comment on some of their expected results.

2.3 Gender Roles Hypothesis

The first hypothesis tested below concerns gender roles. Using Presser (2003) as a basis for the first set of models, the theory that husbands do more work when home alone is tested. This is operationalized by looking at how differences in work schedules within a couple affect divisions of household labor. A second operationalization of gender roles is the gender ID scale used as a control. In this research, unfortunately, questions are only asked about willingness to complete various

¹ Time Diaries have seen increasing favor in US social science research, with the US Bureau of Labor Statistics recently creating the American Time Use Survey (ATUS) to complement the existing American Heritage Time Use Survey (AHTUS)

household tasks, instead of a full battery of questions about gender identification. While this differs from the information in Presser's model, it does allow some vantage point into how much individual willingness to complete household tasks matters to their execution, which taps directly into the above discussion about the work of Breen and Cooke (2005).

2.4 The Specialization in the Household Hypothesis

Following on Becker's specialization theory, the second hypothesis tests what effect a differential in amount of time worked has on the division of labor in the household. This thesis is operationalized through calculating the work differential (husband's hours last week - wife's hours last week), to create a competing measure of paid work. Looking directly at the division of labor in the household without considering shifts is more directly related to the specialization thesis in terms of bargaining within the household and proves substantively and statistically more significant both with and without controls. The research below will first calculate mean statistics for the division of labor in the household and data on the work life balance. It will then test the two hypothesis above using bivariate analysis and models which include controls. The results will be presented and discussed, especially regarding their significance to the current body of research and as a starting point for future research.

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3. Data and Methodology

3.1 The Data Set

This paper uses the UK 2000/1 Time Use Study to calculate time spent in paid work and household labor. The data set used for this research is the UK 2000/1 Time Use Survey. This is a specially drawn probability sample which was undertaken by the UK Office of National Statistics. The survey lasted from summer 2000 through fall 2001. Every member of a selected household over 8 years of age was asked a battery of questions as well as to provided with a 7 day work diary as well as two 24-hours time use diaries one each for a weekday and weekend. The work diaries were used to record if the respondent was working or not in 15-minute intervals. The 24 hours diaries were used to record 144 ten minute time slots with main activity, secondary activity, other person present and location recoded for each time slot. The day started at 4:00 am and ends at 3:59 am the next day. According to the Office of National Statistics (ONS), the response rate for the household questionnaire was 61% (Office of National Statistics, 2004). Within those households, 81% of individuals took part in the individual questionnaire, with 73% of all possible diaries being completed. The net response rate was 45%, and 21000 24-hour diaries are available for analysis. From this sample, a sub sample of dual earner couples was selected. A further specification was that they have each completed the 7-day work diary and at least one 24-hour diary, including 3 distinct necessary activities (work, sleep, eating, personal care, leisure) and have no more than 90 minutes of missing data. In total this left 1368 valid respondents with 2583 diaries for analysis.²

² There are some minor issues with missing data which may cause the N values presented here to not always add up to 1368- this will be fixed in future versions of the paper.

3.2 Counting Time in Housework

The first task in arranging the data was to count the hours spent in housework for each individual. This was done for 9 separate categories of housework as defined by Presser (2003). This includes female (cooking, dishes, cleaning the house and tending to clothes), male (work on the physical or outdoor home, and car repair) and neutral tasks (shopping for household goods, paying bills, driving household members). The primary activity is considered first, then the secondary activity (if the primary activity is not a household task) with no time slot counted twice.

As discussed in the literature review, these estimates proved to be much lower than similar questionnaire estimates. They were, however, directly in line with prior US and UK estimates. Table 1 illustrates this point by comparing the UK 2000 estimates with Bianchi *et. al.* (2000).

Year	Men	Women	Average
US 1965	4.9	30	17.45
US 1975	7.2	23.7	15.45
US 1985	9.8	19.7	14.75
US 1995	10	17.5	13.75
UK 2000	10.1	18.4	14.25

Sources: 1965-1995, Bianchi *et. al.* (2000); 2000 author.

The means for specific types of housework are presented in Table 2 below (section 4), and widely used in the results below. All bivariate analyses of household division of labor are weighted results, using the ONS supplied gross diary weight, which is meant to be representative of the UK population. Husband's share of female tasks and total minutes spent on female tasks were both calculated from this information and used as dependent variables in the models presented in section 5.

3.3 Determining Work Schedules

The first of two calculations for time spent in paid work centers on the shifts and co-presence of the partners. To calculate this the 7-day diaries were used in conjunction with questionnaire data about shift work. The first step in this calculation was to align the cases to all start on Monday. Then the start and end time of each shift was calculated, with shifts shorter than 90 minutes being ignored (if there were later shifts) and gaps of 90 minutes or less ‘filled in’ and assumed to be part of the same job. This manipulation was necessary in less than 5% of cases, and it generally seemed that the respondents were marking the same job starting or stopping when only breaks were being taken. A further 3% of worksheets were too erratic to be classified, and most of these would also have been excluded due to either working from home or having bad or missing 24-hour diaries. Once each day had a start and end time, that day’s work was defined into one of three time slots depending on when the *majority* of hours were worked. These time slots are: Day (8am-4pm); Evening (4pm-Midnight); Night (Midnight-8am). A weekly work schedule was created from the daily information and each individual was placed into one of five categories: “Fixed Day”; “Fixed Evening”; “Fixed Night”; “Rotating” (Shift); “Varied”. The first three categories are used if the same shift is worked each working day. Shift work categorized by hours varying and a questionnaire response answering that shift work is done in the job. If this question is answered as false, then “Varied” hours are assigned. It is worth noting that this method lists only 2.8% of respondents involved in shift-work, while 20% claim to work some shift-work, which implies some people claim to work shifts, but it is all within the same period of time (e.g. a rotating

schedule, but all during daylight hours). This highlights the need for diary and questionnaire data when dealing with time. The results presented are weighted to be representative of the UK population, and these results of the work schedule calculations shown in Table 3 below (section 4). They are also used to create the work schedule set of dependent variables, as discussed in the modeling section. As with housework, the individual results are aggregated to the household level, so each husband's case also lists his wife's information, and vice versa- which allowed creation of dummy variables in the regression.

3.4 Calculating Work Differentials

The second operationalization of time spent in paid work is the work differential. This is calculated as the number of hours the husband worked in the surveyed week minus that of his wife. This has a near-normal distribution centered around a mean of +12, meaning the husband worked 12 more hours than his wife on average, and a standard deviation of just over 18 hours difference. The modal situation was the husband working more, with around 72% of the respondents having this situation. A further 18% had the wife working more, and 10% worked an equal number of hours. This variable is used in the models below to test the specialization hypothesis.

3.5 Tests for Significance

Analysis of Variance testing is used below to look for significant differences within a gender when the definition of work hours has changed, for example, to see if the amount of household tasks men do is different if households are synchronized or not. A 2-tailed t-test was run to determine if there was a statistically significant difference in means between men and women's work overall, and as Table 2 shows below, the

difference between the sexes was significant in many cases. For other tables below Analysis of Variance (ANOVA) tests are used, and this is clearly indicated when that is the case.

3.6 OLS Modeling

Ordinary Least Square (OLS) Models were used to test the two competing hypothesis laid out above. The basic for of the models was based on Presser's (2003) models. Two different dependent variables were used, the first being husband's share of female tasks and the other minutes per day spent in female tasks for each gender. Husband's share illustrates the stratification in the household, whereas minutes per day is calculated separately for both husbands and wives and shows the effect on the individual rather than at the household level³. This is important to see where exchanges are being made as opposed to more one-sided changes (i.e. where husbands do more household tasks while wives do less, as opposed to when wives do less and the husband does not pick up the slack). The primary independent variable is time spent at work, alternating between shifts and work differential as the dependent variable. Control variables include human capital and class measurements operationalized via absolute measures for individuals and differences within the household, as well as number of children and gender identification. Gender identification is measured through a series of questions asking the individual's willingness to perform certain household tasks. As will be seen below, this is

³ Hours per week in housework is used in the bivariate analysis for ease of interpretation and to more directly compare with Presser's information. Minutes per day in housework is reported in the models as it creates easier to understand unit changes (less leading zeroes) than hours per week. Wife's share is used in the tables, but husband's share is used in the models, again this is for presentation reasons and an astute reader can easily convert the two measures.

significant for men but not women, further advancing the idea that men choose to do housework if they want to, while for women it remains a default.

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4. Descriptive and Bivariate Results

Section 4 shows the descriptive results for both division of labor in the household and work schedules. The division of labor in the household is an important result because it provides additional information to an established field of research and also it falls in line with prior estimates (as shown above), which helps to legitimize the research done for this project. The work schedule descriptive are important because they have been calculated in an unprecedented way and allow a first look into the nature of the labor force in the 24/7 economy. Both sets of information are crucial to section 5 which tests the two main hypothesis with controls using OLS models.

4.1 Overall Division of Labor in the Household

Table 3 shows the weighted averages for each of the nine individual tasks, as well as the three overall types and the totals.

TABLE 3- MEAN HOURS PER WEEK SPENT IN HOUSEHOLD TASKS, BY GENDER (WEIGHTED).			
	Male Avg	Female Avg	Female Share
Female Tasks	5.1***	15.7	74.1%
Food Preparation	2.8***	6.3	68.0%
Doing Dishes	0.9***	1.8	65.3%
Cleaning the House	1.0***	4.1	79.1%
Tending to Clothes	0.4***	3.5	88.1%
Male Tasks	3.6***	1.3	24.8%
Household (physical) Maintenance	2.8***	1.1	26.7%
Working on Autos	0.7***	0.2	16.6%
Neutral Tasks	1.6*	1.9	53.3%
Shopping for Household Goods	0.6**	0.9	58.8%
Paying Bills	0.3	0.2	41.8%
Driving Household Members	0.7	0.8	51.7%
Total Task	10.2***	18.9	63.2%
N	683	683	
Stat differences are T-tests between genders.		* < .05; ** < .01; *** < .001	
Source- UK 2000/1 TUS.			

For the average household it is clear that the wife does much more housework than the husband overall, and especially in the female tasks. The task definitions clearly

function correctly, as the neutral tasks are split while the male tasks are predominantly male and the female predominantly female. The largest differences are in clothes and cleaning, where men do less than a combined hour and a half over the week. Most of the differences are statistically significant between the genders when compared with a two tail T-test, further highlighting the stratification within the home.

4.2 Distribution of work schedules, days and combinations.

Tables 4.1 and 4.2 show the distribution of work schedules for the sample of dual-earner couples who provided seven day work diaries.

TABLE 4.1- DISTRIBUTION OF SHIFTS, DAYS AND COMBINATION (WEIGHTED), OVERALL				
Shifts	Total			
	All	Less than 35 Hours	35 to 40 hours	>40 hours
Fixed Day	86.9%	87.6%	89.9%	83.9%
Fixed Evening	3.9%	4.1%	2.8%	4.2%
Fixed Night	2.3%	1.8%	1.5%	3.5%
Hours Vary	4.2%	4.2%	2.4%	5.0%
Rotating	2.8%	2.3%	3.4%	3.4%
Days Worked				
All 5 weekdays	41.7%	37.0%	63.5%	40.3%
Less than 5 weekdays	24.2%	39.8%	7.0%	1.3%
Seven days	5.6%	1.4%	2.1%	15.8%
Weekday and weekend - less than 7 days	27.4%	19.9%	27.5%	42.5%
Weekend only 1 or 2 days	1.1%	1.9%	0.0%	0.0%
Combination				
Fixed day, 5 weekdays	39.9%	35.2%	61.9%	38.6%
Fixed day, weekend only	21.9%	36.1%	6.1%	1.1%
Rotating or Varied and Weekend	4.2%	4.3%	2.4%	5.0%
Other	33.9%	24.4%	29.5%	55.3%
N	1368	680	220	468
Source- UK 2000/1 TUS.				

Shifts	Male				Female			
	All	Less than 35 Hours	35 to 40 hours	>40 hours	All	Less than 35 Hours	35 to 40 hours	>40 hours
Fixed Day	87.3%	88.6%	90.5%	84.6%	86.4%	86.9%	89.3%	82.2%
Fixed Evening	3.8%	3.5%	3.7%	4.3%	4.0%	4.4%	1.8%	4.0%
Fixed Night	2.5%	2.3%	1.7%	3.1%	2.0%	1.5%	1.3%	4.3%
Hours Vary	3.9%	3.8%	1.9%	4.8%	4.5%	4.4%	3.0%	5.7%
Rotating	2.4%	1.8%	2.2%	3.2%	3.2%	2.7%	4.8%	3.8%
Days Worked								
All 5 weekdays	42.7%	38.3%	64.3%	39.5%	40.7%	36.0%	62.5%	42.3%
Less than 5 weekdays	20.5%	41.2%	7.8%	1.6%	28.1%	39.1%	6.0%	0.8%
Seven days	6.9%	1.4%	2.4%	14.9%	4.2%	1.4%	1.8%	18.0%
Weekday and weekend - less than 7 days	29.2%	17.6%	25.5%	44.0%	25.5%	21.4%	29.8%	38.9%
Weekend only 1 or 2 days	0.7%	1.6%	0.0%	0.0%	1.5%	2.2%	0.0%	0.0%
Combination								
Fixed day, 5 weekdays	41.0%	36.6%	62.8%	37.8%	38.8%	34.0%	61.0%	40.5%
Fixed day, weekend only	18.6%	37.5%	7.1%	1.3%	25.4%	35.4%	5.0%	0.6%
Rotating or Varied and Weekend	3.9%	3.8%	1.9%	4.8%	4.6%	4.6%	3.0%	5.7%
Other	34.6%	22.1%	28.1%	56.1%	31.3%	26.0%	31.0%	53.2%
N	682	209	122	352	686	471	99	116

Source- UK 2000/1 TUS.

These tables show column percentages for shifts, days worked and the combinations of the two. An important finding is that the majority of workers in the sample (>85%) work fixed day schedules. This is true of those in both part-time or full time employment and is higher than the same averages for Presser's (2003) US data. A standout exception are part-time workers, who remain in fixed day employment rather than fixed evening or night, with the UK sample being less than half as likely to work evening or night jobs. This is likely due in large part to the lack of late-opening retail work, and can be seen most clearly when looking at women employed part-time;

around 14% of those women in the US data work fixed evening compared to only 4.4% of UK women from a similar sample.

Another significant variation from the US data is a much higher number of both men and women working less than five weekdays when in part time employment. Much of this can be understood by considering the nature of part-time work in the UK as opposed to the US. The former labor market often relies on part-time (usually female) labor to come in for two or three full days a week, while the US market is much more likely to employ this same labor for shorter periods over more days. In the sample, working less than 5 days a week (and no weekends) is mainly the domain of part-time workers, though some full-time employed do it as well, but there is unsurprisingly little evidence of a 4-day full-time week emerging. The numbers of people working shift-work or varying hours is around 5% for all levels of employment and gender, and the total number of non-standard employees is around 10%. While this provides a brief overview of the sample, a more thorough examination of who works what types of work shifts and why looks to provide a fertile area of examination using this data set, and perhaps combined with questionnaire data (either from this or another data set) is an area that could be expanded from this work. Returning to the question at hand, it is clear that at least 10% of all categories work non-standard hours or days. Further, only around 40% of the sample works full-time, five days a week, with a further 22% working fixed days and weekdays only. Taking that as an understanding of normal working time reveals almost 40% of the population working outside of a normal day-time and weekday paradigm.

4.3 How many households have a non-standard member.

Once the work times of the population are known, the next question to be answered is how many households have at least one partner in non-standard employment. Taking the weighted averages of the household, 27.4% of the population has someone working a non-day shift (188 of 686 households in the sample, reported n values are unweighted). 17.5% of households have a wife working non-standard hours, while 25.1% of household have a husband working nonstandard hours. 3.6% of households have both partners working non-day shifts. This highlights the importance and prevalence of non-daylight work in the UK.

4.4 Housework when at least one partner works non-daylight hours.

Table 5 shows the average divisions of household labor in households with and without synchronized shifts. Presser (2003) and Hochschild (1994) stress that the more a man is home alone, the more work he will do. This table tests the theory that women do a larger share of the housework when they and their partners are synchronized. It is clear that this does not create nearly the large differences expected from the theory in terms of total hours worked. There is likewise little change when the female share of these tasks is considered. As stated above, ANOVA tests were carried out within each gender using if either partner worked non-daylight as a comparison variable (e.g. mean time spent on female tasks for men when shifts are synchronized compared to the same task when shifts are not synchronized)⁴. These tests proved generally insignificant, and show the synchronization of shifts alone is not well correlated to divisions in household labor.

⁴ A T-test was also carried out with similar results. ANOVA testing was used to match table 6, which uses a non-binary categorical variable making ANOVA testing more appropriate.

TABLE 5- MEAN HOURS PER WEEK SPENT ON HOUSEHOLD TASKS, BY GENDER AND SYNCHRONIZATION OF SHIFTS (WEIGHTED).						
	Desynchronized Shifts			Synchronized Shifts		
	Male Avg	Female Avg	Female Share	Male Avg	Female Avg	Female Share
Female Tasks	5.3	15.3	73.0%	4.9	16.0	75.4%
Food Preparation	2.8	6.4	68.3%	2.6	6.4	69.6%
Doing Dishes	0.8	1.7	64.7%	0.9	1.8	66.3%
Cleaning the House	1.2	4.2	77.3%	1.0	4.1	79.2%
Tending to Clothes	0.5	3.1	84.8%	0.4	3.6	90.1%
Male Tasks	3.1	1.2	26.6%	3.7	1.3	24.5%
Household (physical) Maintenance	2.4	1.0	26.8%	2.9	1.1	26.9%
Working on Autos	0.7	0.2	25.8%	0.8	0.1	13.4%
Neutral Tasks	1.3	1.6	53.7%	1.5	2.0	54.5%
Shopping for Household Goods	0.4	0.7	62.6%	0.6	0.9	61.0%
Paying Bills	0.1*	0.3	71.9%	0.3	0.2	33.2%
Driving Household Members	0.8	0.6	42.5%	0.6	0.8	56.0%
Total Task	9.7	18.1	63.7%	10.1	19.3	64.1%
N	184	184		497	497	
Source- UK 2000/1 TUS		ANOVA test within gender between synch. categories. p-values: *<.05; **<.01; ***<.001				

4.5 Division of Labor by Who Works More

Table 6 shows the division of household labor based on who works longer hours in their paid job. This looks specifically at the correlation between the division of paid work hours in the household and the division of housework.

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TABLE 6- DIVISION OF HOUSEHOLD LABOR BY GENDER OF WHO WORKS MORE AND GENDER.									
	Sex of Primary Earner								
	Female			Equal (+/- 2.5 hours)			Male		
	Male Avg	Female Avg	Female Share	Male Avg	Female Avg	Female Share	Male Avg	Female Avg	Female Share
Female Tasks	8.3***	12.6***	60.4%	5.3	13.4	71.9%	4.2	16.9	80.0%
Food Preparation	4.1***	5.4***	56.6%	3.0	5.6	64.9%	2.3	6.8	74.7%
Doing Dishes	1.3*	1.5**	53.2%	0.6	1.4	68.8%	0.8	1.9	70.6%
Cleaning the House	1.8**	2.9***	61.8%	1.2	3.1	71.8%	0.9	4.6	84.2%
Tending to Clothes	1.0**	2.8	73.4%	0.4	3.4	89.3%	0.3	3.6	93.0%
Male Tasks	5.4*	1.4	20.3%	3.3	1.0	24.1%	3.1	1.2	28.6%
Household (physical) Maintenance.	4.6**	1.2	21.2%	2.4	0.7	23.9%	2.4	1.1	31.3%
Working on Autos	0.8	0.1	14.5%	0.9	0.3	24.6%	0.7	0.1	17.4%
Neutral Tasks	1.4	1.5*	50.4%	1.4	1.4	50.5%	1.5	2.0	57.6%
Shopping for Household Goods	0.6	0.8	57.8%	0.6	0.5	44.0%	0.5	0.9	65.9%
Paying Bills	0.2	0.2	51.7%	0.2	0.2	48.1%	0.3	0.2	40.3%
Driving Household Members	0.7	0.5	41.0%	0.6	0.7	56.8%	0.7	0.9	55.8%
Total Task	15.1***	15.5***	50.6%	10.0	15.9	61.5%	8.8	20.2	69.6%
N	119	119		65	65		496	496	
Source UK 2000/1	* p < .05, ** p<.01 *** p<.001								
Note: Significance testing is within gender by Sex of Primary Earner (e.g. Husbands in all three categories). Significance is reported only in the first column, but is true within that gender for the entire table.									

This table uses an ANOVA significance test between all three work arrangement categories and shows the division of labor is much more significant when measured using the work differential instead of differences in shift. The results from this table highlight the existence of a second shift for women regardless of which partner works more. Even in situations where the husband works within 2.5 hours or less than his wife he still does fewer hours of overall housework and less of the female tasks. This group does see the most equality of any group analyzed in the research and has a particularly equitable share of the overall housework and neutral tasks. Despite the small numbers in the sample, each of the female tasks and the total tasks are

statistically and substantively significant. This implies that the three categories of which partner works more (derived from the work differential variable) are significantly correlated to substantive differences in the division of household labor. This shows the difference in work hours is a better predictor alone, and implies that the specialization hypothesis is somewhat true, with the gap narrowing as work hours become more equal. That said, it is clear that some lingering second shift still exists as women where work hours are nearly equal still shoulder 10% more of the household tasks.

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5. Model Results

This section advances the hypothesis testing of the prior section by including control variables to test and control for alternate hypothesis. The use of OLS modeling techniques allow for a comparison of model fits by changing only one aspect at a time, either changing how work is measured or nesting the model to show its construction, and comparing the adjusted R-square values of the models. These values report the amount of variation explained by the model, herein called the model ‘fit.’ Sections 5.1 through 5.3 report results for both hypothesis. Section 5.4 reports results for the combined model and demonstrates that even when used together work difference is the more useful dependent variable for paid work arrangements, demonstrating further support for the specialization hypothesis.

5.1 Presser’s model of husband’s share of female tasks.

Model 1 is a copy of Presser’s (2003) model, using dummy variables for shift arrangements to operationalize paid work. This model tests the hypothesis that a lack of co-presence has a substantive and significant effect on the husband’s share of female tasks, which is crucial as female tasks are the most time consuming and the type of household tasks that is most stratified.

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TABLE 7- OLS RESULTS OF MODEL 1	
MODEL 1- PRESSER'S (2003) MODEL FOR HUSBAND'S SHARE OF FEMALE TASKS.	
	Coefficient
Only Husband Works Day	-0.035
Only Wife Works Day	0.063**
Both Work Non-Day	-0.026
Husband works weekends	-0.059***
Wife works weekends	0.050***
Wife Professional, husband not	0.076***
Husband and Wife Both Professional	0.097***
Husband Professional, wife not	0.069***
Wife Earns More	0.000
Income Difference h-w	0.000*
Earnings Missing for either partner	-0.047*
Income Ratio	-0.003
Husband's Gender ID	-0.062***
Wife's Gender ID	0.003
Number of Children Under 5	0.011
Number of Children aged 5-17	-0.007
Husband High School Grad (no further ed.)	0.067**
Husband Less Than High School Educated	0.021
Wife has more than 2 years extra schooling	0.005
Wife has 1 or 2 years more schooling	0.041
Husbands education equals wife	0.020
Husband has 1 or 2 years more schooling	0.028
Constant	0.424
Adjusted R-Squared	0.158
Excluded: Both Work Days, Husband has 2 or more years of schooling, Both Work Days, Neither Partner is Professional Class.	
Source UK 2000/1 TUS	* p < .05, ** p<.01 *** p<.001

The coefficients in this model indicate the % change in husband's share of housework. Both gender IDs are on a five point scale, with higher numbers indicating less willingness to perform female tasks. The income ratio is a zero to one scale, and the rest of the variables (except number of children) are dummy variables indicated with a zero or a one. The first thing to notice in this model is that if the wife is out of the house during the day, the husband has a substantive and statistically significant

increase in his share of the housework (approximately 6%). If either partner works weekends that decreases their share of the housework, which is reasonable given how much domestic work is normally undertaken on ‘days off’. These results are different from the bivariate statistics, in part because education and class are controlled for in the model. Husband’s gender identification is very significant, but this is to be expected as the questions ask about attitudes towards housework (higher indicates greater reluctances). Perhaps more interesting is the lack of significance in this and all models of a wife’s gender ID- this implies that her attitudes do not matter but that a husband’s do. This is consistent with Breen and Cooke (2005) who suggest that a husband’s willingness is key in a more equitable division of household labor. The finding is also in line with Coltrane’s (2000) commentary on a man’s role traditionally being one of ‘helping out’ (implying a choice). Education is not very significant, but class differences are. There is some element of class stratification- such that either partner being a professional increases the husband’s share- and both partners being professional has the largest increase (nearly 10%). After controlling for class, even having a high school education increases the husband’s share of work, showing the most stratification in the household (among dual earner couples) at the bottom of the socio-economic stratum.

5.2 Husband’s Share Using Work-Differential

As stated in the methodology section, model 1 was improved upon by using work difference instead of shift timing. The results of the model using work differential are seen in models 2.1 to 2.4.

TABLE 8- OLS RESULTS FOR MODELS 2.1 TO 2.4				
MODELS 2.1 TO 2.4: HUSBAND'S SHARE OF FEMALE TASKS WITH DIFFERENCE IN TOTAL TIME AT WORK AND DEMOGRAPHIC FACTORS.				
	Model 2.1	Model 2.2	Model 2.3	Model 2.4
	Coef.	Coef.	Coef.	Coef.
Difference in total time at paid work in the household	-0.004***	-0.004***	-0.004***	-0.004***
Wife Professional, husband not		0.045*	0.075***	0.07***
Husband and Wife Both Professional		0.04*	0.082***	0.087***
Husband Professional, wife not		0.064*	0.062***	0.063***
Wife Earns More			neg **	neg**
Income Difference h-w			neg	neg
Earnings Missing for either partner			-0.045*	-0.034
Income Ratio			neg	0.001
Husband's Gender ID			-0.058***	-0.059***
Wife's Gender ID			0.007	0.005
Number of Children Under 5			0.035*	0.034*
Number of Children aged 5-17			neg	-0.001
Husband High School Grad Only				0.059**
Husband Less Than High School Educated				0.014
Wife has more than 2 years extra schooling				0.003
Wife has 1 or 2 years more schooling				0.028
Husbands education equals wife				0.009
Husband has 1 or 2 years more schooling				0.021
Constant	0.305	0.337	0.484	0.452
Adjusted R-Squared	0.098	0.108	0.209	0.214
Excluded: Husband has 2 or more years of schooling than wife, Husband earns more, Neither partner is professional class.				
Source UK 2000/1 TUS		neg = negligible; * p < .05, ** p<.01 *** p<.001		

As with model 1, the coefficients represent a % change in husband's share of the housework. All of the variables are the same as above, with the addition of work difference, which ranges from -57 to +64, with a mean of 12 and a standard deviation

of around 18⁵. That means the effect of the standard deviation (-.004 * +/- 18) is +/- .072, showing a substantive difference in line with the other variables, despite the seemingly small coefficient. This is due to most of the other variables being binary, with the exception of gender identification, which is on a 1-5 scale and is the most substantively significant in the model. The table above also shows that if either member of the household is in the professional class it increases the husband's share of housework, and both being professionals greatly increases the husband's share of housework.

The work difference models clearly fit the data much better (explaining over 21% of the model as opposed to 15.8% for a shift-based calculation of work time). The signs of most effects stay the same, as do the relative significances, meaning the control effects remain similar. The nested models here also allow for the effect of class to be seen increasing in significance as controls for education are added. Overall, this shows that who works more is a better predictor of the husband's share of female tasks than work schedule information, and implies that the specialization thesis as operationalized through work differential is more fitting than a thesis based on gender roles and operationalized primarily through co-presence.

5.3 Minutes Spent on Housework per Day

Models 3.1 to 3.4 look at minutes per day spent on female tasks by gender and with both dependent variables for work.

⁵ Models were run using the sex of primary worker independent variable for work with similar results, but are not included here as the work-difference models are more significant and easy to understand.

TABLE 9- OLS RESULTS FOR MODELS 3.1 TO 3.4				
MODELS 3.1 TO 3.4- MINUTES OF FEMALE TASKS/DAY BY GENDER				
	Model 3.1 (Females- Shifts)	Model 3.2 (Females- Work Diff)	Model 3.3 (Males- Shifts)	Model 3.4 (Males- Work Diff)
	Coef	Coef	Coef	Coef
Difference in total time at paid work in the household	---	1.256***	---	-0.703***
Husband Works Days, Wife does not	1.424	---	-1.087	---
Wife Works Days, Husband does not	-16.351	---	13.813*	---
Neither Husband or Wife work days	8.313	---	-7.045	---
Husband works weekends	11.092	---	-11.77**	---
Wife works weekends	-6.033	---	9.593*	---
Wife Professional, husband not	-26.243*	-25.014*	6.357	5.172
Husband and Wife Both Professional	-17.136	-14	15.332**	13.429*
Husband Professional, wife not	-8.157	-6.63	15.067**	13.788**
Wife Earns More	-0.013	-0.009	-0.006	-0.009*
Income Difference h-w	0.001	-0.002	-0.006	-0.004
Earnings Missing for either partner	7.512	3.537	-7.391	-5.208
Income Ratio	2.972	1.479	-0.17	0.533
Husband's Gender ID	15.002***	13.966***	-10.314***	-9.651***
Wife's Gender ID	-5.85	-6.167	-1.752	-1.271
Number of Children Under 5	5.514	-0.956	5.221	9.676*
Number of Children aged 5-17	7.856*	5.882	0.76	1.963
Husband High School Grad Only	-11.808	-9.307	9.52	7.863
Husband Less Than High School Educated	2.466	4.521	6.733	5.289
Wife has more than 2 years extra schooling	-5.717	-6.247	-1.375	-1.745
Wife has 1 or 2 years more schooling	-14.167	-11.489	3.256	1.246
Husbands education equals wife	-3.415	-0.167	-2.847	-4.361
Husband has 1 or 2 years more schooling	-3.286	-1.27	-2.021	-3.102
Constant	107.195	98.043	81.452	86.262
Adjusted R-Squared	0.105	0.164	0.074	0.114
Excluded: Husband has 2 or more years of schooling than wife, Husband earns more, Neither partner is professional class.				
Source UK 2000/1 TUS		neg = negligible; * p < .05, ** p<.01 *** p<.001		

The table above shows coefficients as unit changes in minutes per day of housework. All of the conclusions made in models 1 and 2 still hold for each gender. Further, the signs and effects are similar regardless of the two different independent variables for work and the significance testing is rather similar, though again the work differential model fits better. Effect sizes for each variable are consistent between genders and the signs flip between the genders in most situations. This shows that what has a positive effect for men's work has a negative for women's work, showing some form of exchange model of housework (where men gain, women lose), though it is not necessarily an equal exchange. This is not the case for the presence of children, who seem to increase work overall, though this is not a statistically significant finding with the shift-difference variable. A lack of significance is not surprising, because the amount of work is likely easier to change than the timing (especially as part-time work is more likely to be in unsocial hours) so the effect of children could be partially absorbed by the work-difference variable.

5.4 The Combined Model

Table 10 below presents model 4. This model combines both measures for variations in paid work patterns, and husband's share of work as the dependent variable. As will be seen below, the coefficients are similar to both model 1 and 2.4 above, and fits slightly better.

TABLE 10- OLS RESULTS OF COMBINED MODEL	
MODEL 4- COMBINED MODEL FOR HUSBAND'S SHARE OF FEMALE TASKS.	
	Coefficient
Difference in total time at paid work in the household	-0.004***
Only Husband Works Day	-0.009
Only Wife Works Day	0.046*
Both Work Non-Day	-0.062
Husband works weekends	-0.022
Wife works weekends	0.021
Wife Professional, husband not	0.07***
Husband and Wife Both Professional	0.090***
Husband Professional, wife not	0.065***
Wife Earns More	<.001 *
Income Difference h-w	<.001
Earnings Missing for either partner	-0.041
Income Ratio	0.001
Husband's Gender ID	-0.060***
Wife's Gender ID	0.003
Number of Children Under 5	0.030*
Number of Children aged 5-17	-0.002
Husband High School Grad (no further ed.)	0.062***
Husband Less Than High School Educated	0.016
Wife has more than 2 years extra schooling	0.001
Wife has 1 or 2 years more schooling	0.029
Husbands education equals wife	0.006
Husband has 1 or 2 years more schooling	0.022
Constant	0.457
Adjusted R-Squared	0.220
Excluded: Both Work Days, Husband has 2 or more years of schooling, Both Work Days, Neither Partner is Professional Class.	
Source UK 2000/1 TUS	
neg = negligible; * p < .05, ** p<.01 *** p<.001	

The model has similar effects to models 1 and 2. The major exception is that in the combined model the only scheduling variable to be significant is when only the wife works day. Further, all of the scheduling variables have a reduced effect, regardless of their significance. This shows that work-differential explains most of the shift

variation, with the exception of the case above. Gender identification, education and human capital effects are similar throughout the models, and the class effects remain particularly strong, which is referred back to in the conclusion. Overall, this final model shows the two models are not competing but complementary, however the work differential model clearly explains more of the data and supports the specialization thesis as more accurate. As the discussion will elaborate, the answer for this and future project is not to solely use either model, but to integrate that model with gender roles, shift information and class effects⁶.

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⁶ Further analyses were run using a combined model and minutes per day of female task as a dependent. The results were similar and are not presented here to save space, as they only serves to further reinforce the points already made above.

6. Conclusions

6.1 Future Research

This paper opens up many possibilities for future research into the work life balance using this and other data sets. The effect of class on the issue may be central to this problem, where at the top end work is a choice and at the bottom it is a necessity. This would make the division of household labor a question only within the upper echelons of society, where the amount of hours worked is flexible. If this is the case it could explain the combined model only slightly fitting the data better, as the rich would choose *how much* both partners work, while the poor can only choose *when* each partner works (if that). This paper ignored commute times, which could also be a significant factor, especially if one gender works closer to home. This is possible if many of the women or men working have a lower labor force commitment and have a job instead of a career- which would imply a shorter commute as they would be less inclined to travel great distances for work. This would greatly shift their available time in ways left out of this analysis. Further, the consequences of consumption patterns and retail opening hours on the division of labor in the home would be an interesting project that is uniquely suited to the time-use data both in the UK and in the US (especially using the new American Time Use Survey (ATUS) to complement the older American Heritage Time Use Survey). Finally, the models presented above should be applied to the ATUS, AHTUS and CPS data- the last of those projects being the most fruitful as it replicates Presser's substantial work with the data set she used and these new techniques. Variations in work-life balance based on the labor market structure, especially for part-time workers, is a third avenue for this research. Finally, a comparison of diary or questionnaire based estimates for the whole day could be continued, following the work by Robinson and others cited above.

6.2 Conclusion

The results of the research were consistent with what was expected. An unequal division of labor persists in the UK, though the gap has been closing over the last few decades. Also, the diary estimates used here were much lower than similar questionnaire estimates more frequently used in published literature. The distribution of shifts and work days was relatively equal, though different than similar results from the US. This is still a major finding, however, because 7-day diaries have not been used before to measure the distribution of work-times in the UK labor market⁷. Third, the bivariate analysis the difference in work times was found to be statistically and substantively more correlated to variations in the household division of labor than differences in shift patterns. This analysis also showed a persistent second shift, above which the specialization hypothesis is seen in action. Fourth, the individual models show that both work schedules and differential work times fit the data, but the later is a better predictor. Finally, the two models can be successfully combined, which further reinforces the importance of using both theses together and provides a solid platform for future work. Overall, this research points to the usefulness of trying to understand the interconnection of the many different decision making processes in the household.

⁷ Which is part of the reason work schedules are compared to the US above.

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