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THE EFFECT OF CHILDREN ON ADULTS' TIME-USE: ANALYSIS OF THE INCREMENTAL TIME COSTS OF CHILDREN IN AUSTRALIA

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Abstract

Raising children takes both time and money. For almost 150 years, scholars have attempted to find convincing ways to capture the costs of raising children. However, even when these estimates include indirect costs, such as mothers' foregone earnings, little research has been done on estimating the true time costs of raising children. This paper shows how the presence of children changes parents' use of time. It uses data from the most recent Australian Bureau of Statistics' (ABS) *Time Use Survey* to study how the allocation of time differs in households with varying numbers and ages of children and how households with children differ from those with no children. It also examines the intra-household division of time-resources, showing how childcare (and related unpaid work) and parental leisure are distributed between mothers and fathers. Since humans are capable of engaging in more than one activity at a time, the ABS time diaries allow people to report simultaneous activities. A high proportion of time with children is recorded as a 'secondary', or accompanying, activity. This paper shows the effect of including secondary activity in the analysis of total parental time commitments, and gives a more accurate picture of the time cost of children than has previously been possible on the basis of analysing 'primary' activities alone.

1 Introduction

The decision to have children has major consequences for the lives of those who become parents. Social research into those consequences has been dominated by an economic approach that conceptualizes the cost of children as monetary expenditure (Apps and Rees 2000; Folbre 2001; Nelson 1996). A subset of this economic approach has been a comparison of the welfare of families of differing size. Beginning with Engel in 1857, there have been numerous attempts to establish equivalence scales that estimate the relative cost of living in families of different sizes and composition (Barten 1964; Browning 1992; Gronau 1988; Gronau 1991; Rothbarth 1943; Saunders 1998; Valenzuela 1999)

Since parents' care of their own children is an activity that takes place outside the market, comparing welfare solely on the basis of monetary expenditure misses the important point that children also place extremely heavy demands on parental time. But while there is a long history of attempts to estimate the money costs of raising children, little research has been done on estimating the time costs. Even including indirect costs in financial estimates, for example mothers' foregone earnings due to time spent out of the (paid) workforce, provides only a partial account of the time demands associated with raising children (Apps and Rees 2000; Folbre 2004; Joshi and Davies 1999; Klevmarken and Stafford 1997).

Nonetheless, it is possible to use an economic framework to study the use of time because time is a finite resource. When parents allocate time to rearing their children they must reduce the time allocated to other activities. From an economic standpoint, time can be spent in either productive or non-productive activities, and productive activities can be further subdivided into market and non-market activities. Market activities include employment, training, employment-related travel, breaks at work and job search. Non-market productive activities (unpaid work) include indoor and outdoor housework, childcare and shopping. Total productive activity (or the sum of time spent in market and non-market work) is usually conceptualized as the inverse of adult leisure time. But the inverse of the workload examined here comprises more than recreation and leisure; it also includes personal care, voluntary work and social and community interaction. The focus of our analysis is the extent to which households with children withdraw time from these activities and reallocate it to paid or unpaid work.

This paper loosely adapts the marginal costs approach to studying the comparative welfare of adults living in different family configurations, by focusing on their daily workload rather than their income. More specifically, the time cost of children is conceptualized as the difference in daily time spent by parents in (i) interacting directly with children, (ii) unpaid work and (iii) total (paid and unpaid) work, from the time spent in various activities by households without resident children. The logic behind this stepped approach to the time cost of kids is that each successive form of analysis captures the wider impact of children. In addition to the direct, strictly childcare activities, some childcare activities are jointly produced. For example, children's meals are prepared along with adult meals, keeping the house tidy may involve clearing-away children's toys.

A further dimension of the time cost of children is that a very high proportion of childcare is done at the same time as other activities. In most previous studies of unpaid work, childcare has been significantly underestimated because it has been counted only when it was done as a main activity (Bittman and Wajcman 1999; Craig 2002; Ironmonger 1996). Some time diary surveys allow people to report simultaneous activities, but respondents who are in charge of children, and who undertake another activity such as shopping, tend to record shopping as their main activity than the childcare they are also performing. Parents record three times as much time spent in 'secondary' activity childcare as spent in primary activity childcare. Childcare as a secondary activity requires the parent's presence and at least part of their attention, and they are constrained in their choice of activities. So while the main focus of this paper is on primary activity because it is the time-use measure most widely available internationally, we include secondary activity in the analysis of total parental time commitments, to give a more accurate picture of the time cost of children. To overlook it would be a serious under-representation of the time constraints associated with responsibility for children.

Including childcare as a secondary activity in the calculations does not mean that it can no longer be fitted into to a 24-hour framework[1]. Each episode of secondary activity has an accompanying primary activity, so it is possible without double counting to quantify the amount of childcare that is done with each main activity. We know from previous research that typically only a few primary activities, notably domestic labour, socializing, recreation and leisure, ever have childcare as a secondary activity (Craig 2002).[2]

The inclusion of secondary activity is intended simply to quantify more accurately the amount of time spent in childcare activities, and not to make inferences about the quality of the experience. There are other bases than the time spent in childcare on which to estimate the value of parental childrearing time, for example, time spent doing things with children, or doing or planning things for them in their absence (Folbre, forthcoming: 275). But our interest in this paper is simply to give a full accounting of childcare as an activity by comparing the workloads of people according to whether or not they have children and according the ages and numbers of the children they do have.

An aggregate measure of all (market and non-market) work time captures the broad time impact of parenthood upon both mothers and fathers compared with childless people, including any compensating adjustments in the household supply of market work. Our analysis is conducted not only at the household level, exploring marginal differences in the time allocation of the whole household, but also for women and men separately, exploring the intra-household distribution of the time costs of children. This paper builds

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[1]   For a discussion and example of the method of showing primary and secondary activity on a matrix representing a 24-hour period, see Ironmonger, 1996: 244.

[2]   The activity most frequently recorded with childcare as a secondary activity is sleeping. While this does evoke the continuous responsibility of parenthood, sleep cannot be regarded as work. We therefore decided to exclude from our calculation time in which childcare was recorded as a secondary activity to sleep.

upon and extends existing work comparing the time-use of families of different sizes and composition in a number of respects. Previous research has shown that young children require more attention and that family size also influences the time spent by parents (Ironmonger 1996). This paper provides more detail than has been previously available about the combined impact of the number of children and the age of the youngest on their parents' time expenditures.

2 Methods

Data

The Australian Bureau of Statistics conducts regular *Time Use Surveys* which randomly sample over 4000 households across Australia. All household members over the age of 15 are required to record their activities in a diary at 5-minute time-intervals over two designated consecutive days. In addition to affording the opportunity to investigate all the uses of time, including non-market work, the data also make possible the direct analysis of intra-household allocations of time (Australian Bureau of Statistics 1997). In this study we use a sub-sample of this data – adults of prime working age (25-54 years). This population age-restriction simplifies the analysis by removing full-time students and 'early' retirees from the investigation, and concentrating on the age range most crucial in building a career.

This paper uses Ordinary Least Squares (OLS) regression analysis of data from this survey to isolate the effects of varying family composition and size. We wanted to see, all else being equal, what the effect of having one child, and then subsequent children, has on the amount of work, paid and unpaid, that people undertake. The regression analysis is conducted in two parts. The first is run on households to see how the presence of children impacts upon the workload of the family unit as a whole. Then we run separate equations for men and for women to establish how the effects differ by gender.

The model

Dependent variables

The dependent variables are times spent in various activities. The three main dependent variables are time spent in direct childcare as a primary activity, time spent in unpaid work[3] and time spent in total productive activity. An analysis of time spent in total

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[3]   Unpaid work time is comprised of domestic labour and childcare. Domestic labour includes food and drink preparation and meal clean up; laundry, ironing and clothes care; tidying, dusting, scrubbing and vacuuming; lawn, yard, pool and pet care; home maintenance and car care; shopping for goods and services: and travel associated with these tasks. Childcare time is composed of four sub-categories; physical and emotional care, interactive care (reading to, listening to, teaching, reprimanding and playing with children), minding children (supervising without active involvement) and travel and communication for or about children.

productive activities as either a primary or a secondary activity is used to supplement the analysis[4].

Independent variables

The independent variables are those representing family configuration. We create a series of dummy variables combining the number of children in a family with the age of the youngest child. Data about the ages of children are available only in ranges, but the categories allow us to capture the experience of having a youngest child who is an infant (0-2 years), a toddler (3-4 years) or at primary (grade) school (5-11 years). Childcare as a specific activity is not recorded for children 12 and over, so this is our cut-off point.

For the analysis of couples, nine different family configurations were entered into the model as the independent variables of interest Childless couples (household level analysis) or partners in a childless couple (individual level analysis) were omitted:

Youngest child aged between 0 and 2 years

    1   One child, aged between 0 and 2 years;

    2   two children, the youngest of which is aged between 0 and 2 years;

    3   three or more children, the youngest of which is aged between 0 and 2 years.

Youngest child aged between 3 and 4 years

    4   One child aged either 3 or 4 years;

    5   two children, the youngest of which is aged between 3 and 4 years;

    6   three or more children, the youngest of which is aged between 3 and 4 years.

Youngest child aged between 5 and 11 years

    7   One child aged either 5 or 11 years;

    8   two children, the youngest of which is aged between 5 and 11 years;

    9   three or more children, the youngest of which is aged between 5 and 11 years.

In the regression analysis comparing single and partnered people with and without children, the children's age categories were amalgamated into to those under 5 and those 5 and over, in order to ensure sufficient cell sizes. The age of the youngest child was combined with marital and parental status giving 9 separate variables: single man with no children; single mother with youngest child under 5; single mother with youngest child aged 5 to 11; partnered woman with no children; partnered man with no children; partnered mother with youngest child under 5; partnered father with youngest child under

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[4]   In calculating total productive time as either a secondary or primary activity, periods of time when the same activity was conducted simultaneously as both a primary and a secondary activity were counted once only, and childcare as an activity while the parent was asleep was not counted.

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5; partnered mother with youngest child aged 5 to 11; partnered father with youngest child aged 5 to 11. The reference category is single childless women.

In regression model 6, comparing single and married mothers, the sample was limited to mothers only, and 'single parent' entered as a dummy variable.

Control variables

To isolate the effect of family size and composition, we controlled those variables that would independently influence the amount of time in paid and unpaid work. The ages of adults of prime working age were split into 3 dummy variables –- the 25-34 age range, the 35-44 age range (the reference category) and the 45-54 age range.

Acknowledging the strong effect of education on workforce participation and earnings, we include dummies representing educational attainment split into postgraduate, bachelor degree, skilled vocational qualifications, and basic vocational qualifications. The reference category is those without any post-school or trade qualifications. At the household level analysis, we use dummies for possible combinations of qualifications (both partners university educated; both partners with vocational qualifications; one partner university educated, the other with vocational qualifications; one partner university educated, the other with no qualifications; one partner with vocational qualifications, the other with no qualifications). The reference category is households in which neither partner has post-school qualifications. In the individual regressions, the reference category is a person with no educational attainment beyond high school.

We controlled for the combined weekly income as this could affect ability to outsource household work or to use extra-household childcare.

Since time diary data are daily and the pattern of activities varies by day even for the same individual, we also controlled for day of the week by including dummies for Saturday and Sunday. This means the reference category for the individual regressions is any weekday. In the household regressions, we had dummies as follows; 'both diary days weekend', 'diary from Saturday and weekday' and 'diary from Sunday and weekday'.

The hours spent by the respondent's spouse in paid employment could have an impact on the amount of time the respondent spends in household duties. In particular, there has been a widespread assumption that as women increased their commitment to paid work, men would increase their contribution to unpaid work (Bergman 1986). Therefore, we included (as a continuous variable) the usual hours worked by the respondent's spouse. Weekly hours of non-parental childcare was also included as a continuous variable as this could affect the time parents spend caring for their own children. We also included a dummy variable controlling for the presence of a disabled household member, since this could be associated with unpaid work unrelated to the presence of children, although the disabled household member may be of any age. Due to data limitations, we were unable to control separately for the health status of children.

We also controlled for labour force status except where total work was dependent variable (and hence the time spent in paid work was a key component of the variable).

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The reference category is the modal arrangement of households with children in Australia – husbands employed full-time, wives in part-time employment. We experimented with including parental occupation as a series of dummy variables in the model but found that, when paid work was part of the dependent variable, the occupation dummy variables acted inappropriately as a proxy for employment status. When parental occupation was included along with employment status and educational attainment, any additional effects were non-existent or trivial. We therefore excluded occupational status from the model.[5]

To summarize, the purpose of this paper is measure time in total productive activity and its paid and unpaid components across households with no children and households with different numbers of children of different ages. The intention of the research is to estimate the demand children make on parents' time, and explore possible economies of scale associated with family size, and whether there are substitution effects upon types of time-use. We also wish to establish how any adjustments in time-use are allocated between mothers and fathers within the household and how this varies with rising numbers of children and the maturity of the youngest child. We conceptualize the time cost of children as the marginal differences in paid and unpaid work time (both as a main and a secondary activity) between the households and between men and women. In order to isolate the effects of family configuration, we use OLS regression analysis to hold constant a set of human capital and demographic characteristics.

3 Findings

3.1 Household level analysis

We begin this study by looking at the effect of children and family size on primary[6] time commitment at the household level.

Childcare

When a first child is born into a household, the household begins to allocate time to childcare. This is a new time requirement, analogous to direct monetary outlay on child-specific goods, such as diapers and building blocks, not required by childless households. The initial time demand is very large. From a standing start of zero time spent in childcare, the birth of a first child brings a household time allocation of 4 ½ hours a day.

As can be seen in Figure 3.1, it is the impact of an infant which is most pronounced. The allocation of time to childcare follows a downward trajectory as the children mature. When there are no siblings, there is steady decrease of household childcare time. The initial allocation of over four and a half hours a day when there is an infant diminishes to just over three hours a day when there is a 3-4 year old, to one and a half hours when

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5   All charts can be sourced to the ABS Time Use Survey 1997. The full regression models are set out in Appendix 1.

6   The present data identify family configuration by the number of children and the age of the youngest child. At this time we do not have a measure of the age gaps between each child.

there is a primary school child. The steep decline at age 5 shows the strong influence of the child's entry to school. This in turn indicates the importance of extra-household institutions in lowering the time demands of parenthood. The timing of this fall in adults' time spent in childcare may differ cross-nationally. In Australia, the use of day care for under-5s is not widespread, and school entry is a rite of passage that has profound effects on parental time-use. In countries with more established institutional childcare, this drop may occur earlier in the child(ren)'s lives.

Figure 3.1: Predicted primary household time spent in childcare by number of children and age of the youngest child
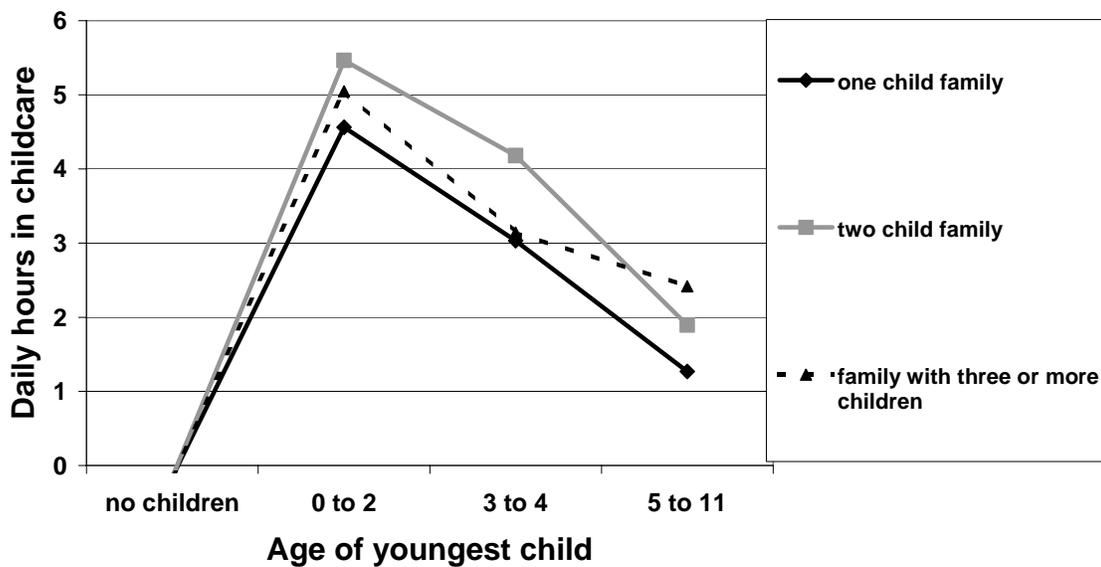
Having subsequent children produces much lower marginal increases in household childcare time. Families with an infant and one additional child allocate about an hour a day more time to childcare than families with just one infant. So rather than a second child occasioning a 100 per cent increase on the childcare time requirement of the first, the proportional increase is 22 per cent.

The proportion of time added by a second child varies with the age of the youngest. When the youngest child is 3-4, household childcare time is 27 per cent higher when there is a second child. With a youngest child aged 5-11, if there are two children in the family there is about half an hour more household childcare time, a proportional increase of 42 per cent. So although household childcare time drops substantially as children age with families of two, the economies of scale are less pronounced as the children mature. This means that the time cost of additional children, though less in absolute terms, becomes proportionately higher the older the children are.

This holds true when there are three or more children in a family. Apparent economies of scale operate even more strongly in larger families with three or more children. The effect is so powerful that, unexpectedly, there is less time allocated to childcare in a family with a youngest child under school age in a family with three or more children than in a family with two children. This puzzling relationship does not persist after the youngest child reaches school entry age; from this point there is an increase of about half an hour household childcare time associated with each additional child when the youngest is aged 5-11. With this age group, a second child brings a proportional increase of 50 per cent childcare time over one child, and a third child brings a proportional increase of 30 per cent childcare time over two children.

On the basis of this information, we are unable to provide a definitive reason why there is less childcare performed in larger families (three or more children) with preschoolers. However, we can make a number of speculations. First, it may reflect a selection effect. Parents may choose to have small families in order to invest more time in producing 'quality' children. Couples who choose to have three or more children may have different attitudes and may prefer quantity. Second, it may reflect a variation in family configuration our data do not capture. It may be that these families with three or more children have a larger age gap between children and contain only one pre-schooler.[7] Third, families with extra children may become more efficient at doing childcare tasks, and fourth, older children may be contributing to childcare of their younger siblings.

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[7] Physical and emotional care/High contact childcare – face-to-face interaction, carrying, holding, cuddling, hugging, soothing, feeding, bathing, dressing and putting children to sleep are all examples of physical and emotional care.

Figure 3.2: Predicted components of primary household time spent in childcare by number of children and age of the youngest child.
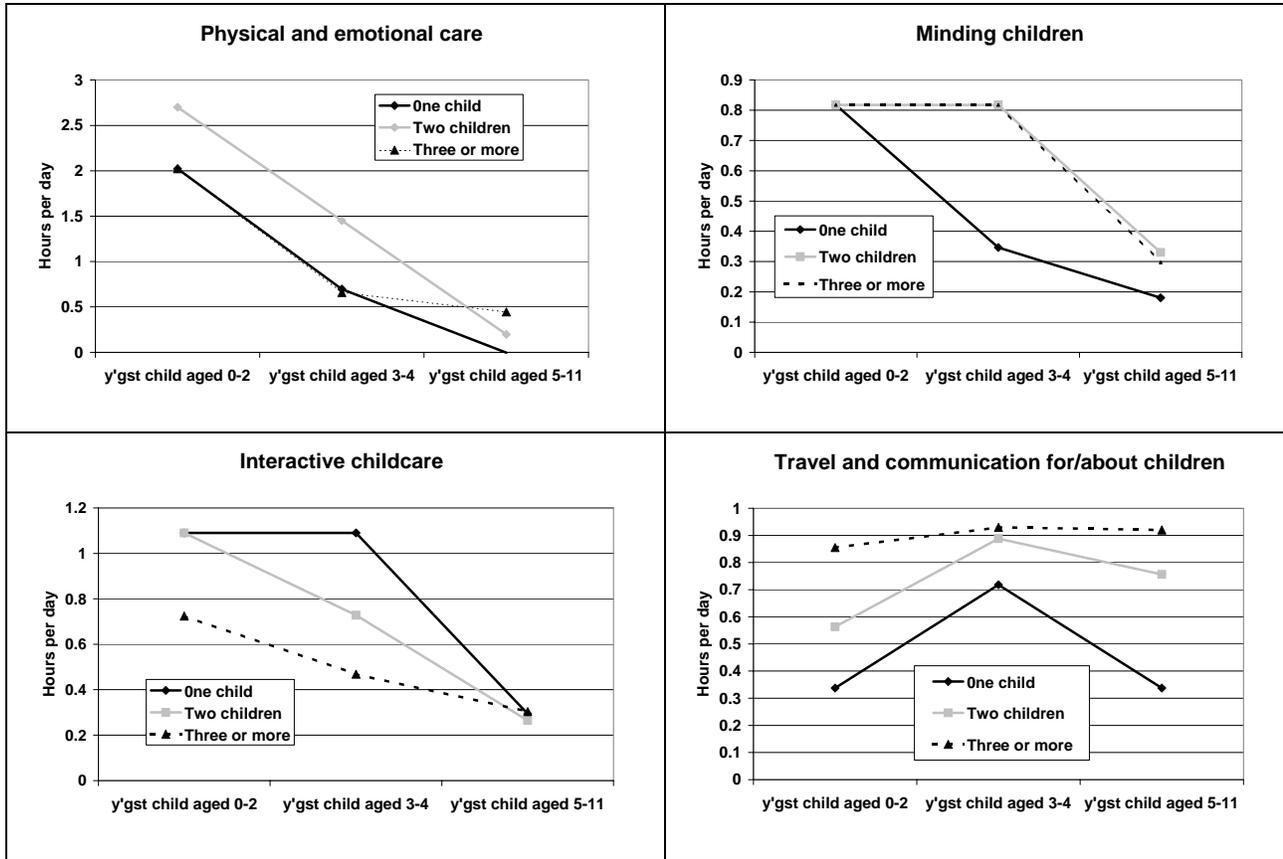
To further examine this last explanation, and to gain a little more insight into how parents modify the time they devote to childcare according to family size, we have disaggregated childcare into four distinct groups. These groupings, developed from earlier collaborative work with Nancy Folbre (Bittman et al. (2004)) capture the different attributes of parents' time with children: (1) physical and emotional care (formerly called 'high contact care'), (2) interactive child care (formerly called 'developmental care'), (3) minding children (formerly called 'low intensity care'), and (4) transporting children and making arrangements with other adults for the children's care.[8] This analysis is represented in the

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Interactive childcare/Developmental childcare – face-to-face parent-child interaction that involves activities believed to be critical for the development of children's linguistic, cognitive, and social capacities. Examples of interactive childcare activities are teaching, helping children learn, reading, telling stories, playing games, listening to children, talking with and reprimanding children.

Minding children/Low intensity childcare – which is distinguished from other categories of childcare because parental involvement is less active. Activities included in this minding children category are being an adult presence for children to turn to, maintaining a safe environment, monitoring children

four panels of Figure 3.2 This more detailed analysis of parents' time spent in childcare by family size shows that, all other things being equal, the time saving in larger families comes mostly from interactive care, which can be reduced by up to a third when the youngest child is below school age. Parents in larger families spend less time in social interaction with their children when their child has the company of a sibling, and even less time interacting with their children when each child has the opportunity to relate to multiple siblings. Regardless of family size, time devoted interactive childcare decreases as the youngest child matures.

Parents' time devoted to minding and to transporting children increases in households with more than one child. The increase associated with the presence of a third child often seems to be relatively small and in the case of child minding very small indeed. The patterns of increase with the age of the youngest child are complex but time spent transporting and making arrangements for children appear to rise with age once there is more than one child present. It is the only childcare subcategory for which this occurs.

Irrespective of family size, time devoted to physical and emotional care of preschoolers declines very steeply as the child matures. When analysed by the number of children and the age of the youngest child, parents' time spent in physical and emotional childcare exhibits the same, seemingly anomalous, pattern as parents' childcare time in aggregate. Compared with parents' time spent with an only child, the presence of a second child is associated with a significant increase, but in contrast, the arrival of a third child actually reverses the sequence so that the parents' time spent in the physical and emotional care of three children is barely different from the time spent with one child. This is especially the case when the youngest is below school age. This ties in with our speculation above that, when there are three or more children, the intervals between births make it likely that the eldest child would be sufficiently mature and responsible to entrust with many aspects of the physical and emotional care of the youngest child.

Unpaid work

While the analysis of direct childcare time shows a great deal about the impact of parenthood on household time, it does not give a full picture of the effect of children. Although time-use coding conventions around the world keep childcare as a separate category, it is actually a subset of unpaid domestic work. Hence tidying up children's

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playing outside the home, keeping an eye on sleeping children, supervising games and recreational activities such as swimming. This is rarely done as a primary activity (ABS 1993: 27).

Travel and communications – which are restricted to cases of journeys and communications associated with childcare activities. In addition to the time spent in motion, travel time includes time spent waiting when taking children to and picking them up from places, such as school, the house of a friend or relative, sports training, music and ballet lessons, parent and teacher nights, meeting trains or buses, etc. Only communications (in person, by telephone or written) centered on the care of children, are included in this category. This includes discussions with a spouse, other family members, friends, teachers and child workers, when the conversation was about the child. Although these activities are not usually active interactions with children, they require a parent's full attention, and cannot, unlike low intensity childcare, be combined with other activities.

toys, cooking for children or cleaning up after children are classified not as childcare but as domestic labour. Nor is time in activities such as shopping, which may increase with the addition of children to the household, coded as child-related. Therefore, calculating time in childcare alone underestimates the time cost of children. We now redress this research gap by investigating the impact of children on household time allocation to all unpaid work.

The presence of a first child has a major impact upon household time in unpaid work. A household with no children allocates nearly 6 hours a day to unpaid work. The presence of one child aged 0-2 nearly doubles that, to a total of 10.9 hours a day. This is an addition of household time in unpaid work of 5 hours a day. As we have seen, childcare accounts for 4 ½ of those hours. So, as with financial outlay that goes beyond direct expenditure on child-specific goods, adding a child to a household is associated with time demands that are not entirely accounted for by additional time spent in direct childcare activities. This becomes accentuated as the children grow.

Figure 3.3 Predicted components of primary household time spent in childcare by number of children and age of the youngest child.
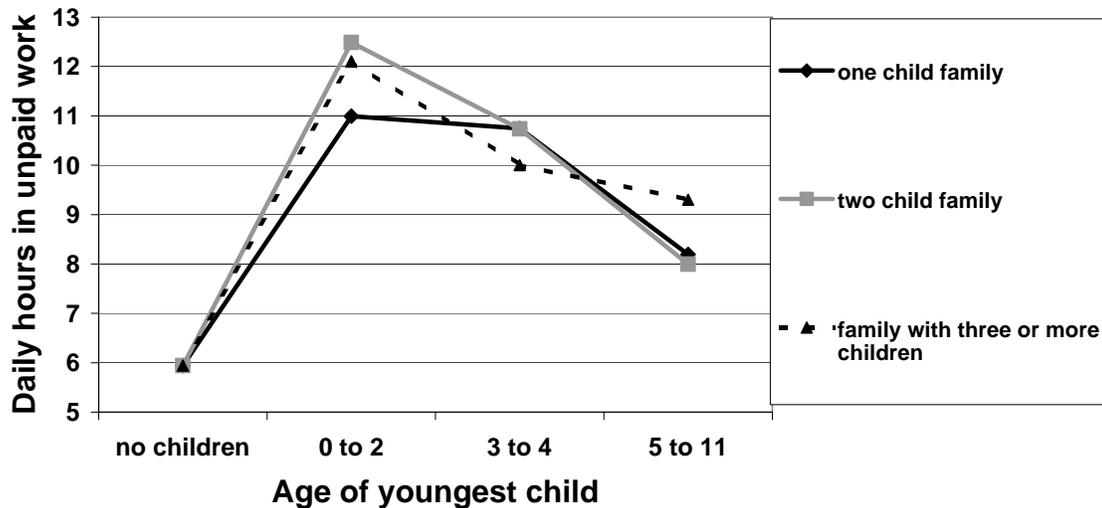
As with childcare activities, the greatest impact comes with the birth of the first child, and the amount of household time spent in unpaid work goes down as the age of the youngest child goes up. This drop is slight when there is one pre-school child in the family, but more pronounced when there are two or more children. In one and two child families, there is a big drop in unpaid work when the youngest child enters school, again showing the enormous effect of school as an institutional substitute for parental time.

However, time in unpaid work does not follow the same pattern of steady decline as childcare. When there is one child in the family, household unpaid work time is almost no

different according to whether the child's age falls between 0-2 or 3-4 years. With one child aged 3-4 years, a household spends nearly 5 hours more in unpaid work than a childfree household. Three hours, 60 per cent, of that time is in childcare. This contrasts with families in which the youngest child is an infant, where 80 per cent of the additional unpaid work time is directed to childcare alone. So the proportion of unpaid work associated with children that can be accounted for by time spent in direct childcare drops as the child matures. It is apparent that the reduction in direct childcare is counteracted by an increase in other types of unpaid labour. As the children age, the amount of household time spent in cleaning, washing, cooking or shopping grows as the need to provide direct childcare falls. This shows clearly that to look only at the amount of time spent in childcare underestimates the impact of children on time demand.

As with direct childcare, there are significant apparent economies of scale with the amount of household unpaid work associated with additional children. When there is an infant in the family, unpaid household work in a family with two children is only 20 per cent more than the additional unpaid work time already associated with the first child. After this age, the apparent economies of scale are so pronounced that the amount of unpaid work done in a family with a youngest child aged anywhere between 3 and 11 years is almost exactly the same whether there is one child or two.

We find that families with three or more children present something of a puzzle. Among three child families have a youngest child aged 3-4 years, the drop in unpaid work time is even more pronounced than drop in childcare time reported earlier. Whereas families with three or more children do less childcare than two child families, but more childcare than one child families, families with three or more children do less total unpaid work than families with either one or two children.

While the unit time cost of children appears to vary with the number and age of children in a family, the mere presence of children has the most profound and lasting an impact. The biggest single impact is with the addition of the first child. Compared to households without resident children, every family configuration is associated with a substantially increased allocation of time to unpaid work. The question is how households cope with such enormous time demands. We next look at how children affect households' total work loads, both paid and unpaid, in other words, at the reverse side of children's effect on adult leisure.

Total Primary Productive Activity (both paid and unpaid)

The running of most households typically entail a large input of paid and unpaid labour. The average total paid and unpaid work for a couple family on the mean income, in which both adults are aged 35-44 and have no post school qualifications, with no disabled family member and no children, on a weekday, is 17 ½ hours a day. However, as can be seen in Figure 4, the impact of the age and number of the children on total productive activity is different than on unpaid work, or its sub-set, childcare. First, the absolute impact is much less. The addition of a first child adds two hours to the daily work commitment of a couple. As a result, the proportional impact is also diminished. Following parenthood, there is an increase in total paid and unpaid workload of about 12

per cent of that already undertaken by childless couples. This is much less than the nearly 100 per cent increase in unpaid work time identified above.

Second, changes in scale do not operate in quite the same way. Having two children with one being under 2 years of age is associated with double the additional productive activity time of having one child less than 2 years of age. There are no apparent economies of scale in this instance. Such a family averages over 4 hours more productive activity than a couple-only household. At a total of nearly 22 hours day, this is the family type associated with the highest amount of total work. So in contrast to the findings for unpaid work, in which the birth of the first child occasioned the biggest impact, total household workload is almost equally affected by the presence of a second child (when the youngest is an infant).

In all other family configurations, total workloads appear to show the affects of economies of scale, so that the extra time requirements associated with subsequent children are not so great as the first. Echoing the findings for unpaid work, when there are three children in a family with a youngest child aged between 0-2 years, the parents' combined total workload is less than when there are two children. Similarly, in families with a youngest child aged 3-4, there is very little difference in total work when there are one or two children in the family, and having three children is associated with less work than either. When the youngest child is of primary school age, having two or three or more children makes almost no difference at all to household time in total work.

Figure 3.4: Predicted household time allocated to paid and unpaid work by number children and age of the youngest child.
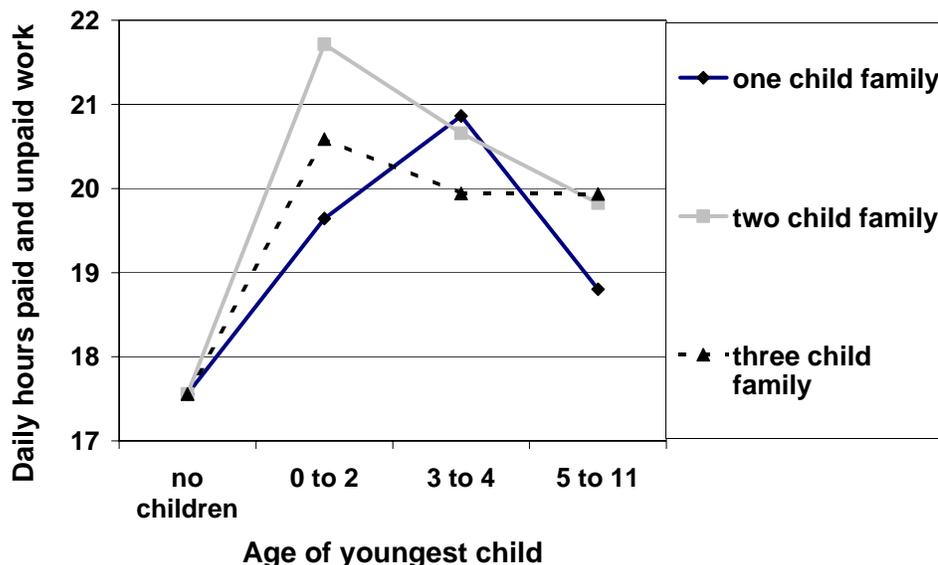
Third, with regard to household time in total productive activity, one-child families show a time use pattern distinct from larger families, which was not apparent with regard to

household time in unpaid work and its subset childcare. In one-child families, there is a significant increase in productive activity when the child matures from infancy to toddler-hood. When an only child enters school, total household productive activity declines to a level only an hour and 12 minutes more than a childless household. In contrast, two and three-plus child families drop about an hour's productive activity between the youngest child being between 0-2 and 3-4 years of age, and then level out at about 2 ½ hours more than a childfree household. Once the youngest child is at school, total household productive activity in a one-child family is about an hour less than in a larger family. Unlike the results found in relation to unpaid work and childcare, in families with two children, parents' total work does not drop much at school entry age. In families with three or more children it does not drop at all. So in total productive activity, unlike unpaid work, there does appear to be a significant time saving with one school age child than with more.

When children are introduced to a household, the additional productive activity is less than the additional unpaid work associated with children. This indicates that rather than adding the childcare and other unpaid work demands associated with children onto the time already allocated to paid work, households redirect time resources to children. Substitution towards the unpaid work associated with children from other types of time use is a major way in which households cope with the time demands of children. This is analogous to the redirection of monetary expenditure away from, for example, restaurant meals following the addition of children to the household. In economic terms, the families are responding to the relatively higher price of going out by substituting other types of expenditure. There is, similarly, substitution towards the unpaid work associated with children from other types of time use. We have already shown that as with money, time resources are subject to apparent economies of scale. Our analysis to this point has shown that these operate mainly within the time use categories of direct childcare and housework. It is apparent that time resources also show substitution effects, and that these show most clearly with regard to total productive activity. The major sources of redirected time are paid work, sleep and leisure.

Childless couples on the mean income supply an average of just over 12 ½ hours a day per household to the labour market. Couples households with an infant child reduce time in paid work by 3 to 4 hours a day. In two-parent households where the youngest child is school age labour supply diminishes by about an hour and a half. The effect of number of children is not straightforward. It could be expected that the more children, the less household time would be devoted to paid work, and certainly, when the youngest child is 0-2 years, having three-plus children is associated with the greatest reduction in paid work time (nearly four hours day). But in other age groups the number of children was not associated with an incremental reduction in paid work. It is apparent that although households with children substitute unpaid work for paid work, the age of the youngest child is crucial, so that there is no monotonic relationship with family size. No significant reduction in household labour supply was associated with the presence of one child aged 3-4, or with two children aged 5-11.

Whereas economists tend to view all non-work time as leisure, time-use specialists tend to separate personal care from free time and view leisure as a subset of free time. All

households with children, except those with one child aged 3-4, spend at least an hour a day less in recreation than childless households. The number of children is at least as strong an influence on the reallocation of recreation time as is the children's age. In one-child families recreation time is reduced by more than an hour per day. In larger families the reduction is greater.

Personal care is comprised of grooming, eating, washing and sleeping. By far the largest component of this activity category is sleep. All households with children spend less time in personal care than childless households. The loss of adult personal care time continues well beyond the children's infancy, and the number of children affects adult time in personal care more strongly than does the children's maturity. In families with pre-school children, personal care time decreases steadily with each additional child. Unlike most other types of time allocation, there is a direct relationship between the number of children in a family and the reduction of adult sleep time.

3.2   Total Productive Activity (paid and unpaid) – Including Secondary Activity

Up to now we have only been dealing with analyses of primary activities. This is an inadequate measure of the time devoted to children. Childcare is significantly underestimated if it is not acknowledged that much of it done at the same time as other activities. While the presence of children may not require activity or direct intervention, it does prevent the carer from being elsewhere, and allows only certain types of other tasks to be undertaken.

Figure 3.5: Comparison of predicted household total workload as primary and secondary activity by number of children and age of the youngest child

Figure 3.5 reproduces as the solid lines those showing total household work in Figure 3.4 and adds the count of productive activity as either a primary or secondary activity as the dotted lines. This makes clear that excluding secondary activity grossly underestimates the amount of time parents spend in productive activity. The magnitude of adult time commitment in a household with 2 infants is over 4 hours more than in a household with no resident children. When we acknowledge secondary activity, this time cost is nearer 10 hours day.

3.3   Within household distribution

This section addresses the question of how couples share between them the responsibility for the reallocation and substitution of one type of time for another following the birth of children. Standard forms of applied economic research are often unable to pursue this question because expenditure data are not able to provide information on intra-household allocation of resources. Time use study is not subject to this limitation. It allows detailed analysis of individual behaviour that can establish how productive activity (both paid work and unpaid work), is actually distributed within the household.

Childcare

Figure 3.6 shows male and female time in childcare separately. It makes clear that women contribute the overwhelming bulk of households' time allocation to childcare

attendant on the birth of the first child. A first child adds over three and half hours of childcare to a woman's workload. The birth of the same child adds just on an hour to the workload of a man. Recall that the increase in household time in childcare following the birth of a first child was 4 ½ hours. If this graph of the individual contribution of men and women is compared with household time in childcare it can be seen that the pattern for females closely echoes the household pattern. Male participation in childcare is so subsidiary it hardly contributes to household allocation of time to direct childcare activities. In families with a youngest child not yet at school, women contribute over three quarters of the household time allocation to childcare activities. When the youngest child is aged 5-11, women contribute about 85 per cent of the total household time allocated to childcare. It is clear that specialization on the basis of sex is profound.

Figure 3.6: Predicted male and female time in childcare by number of children and age of the youngest child
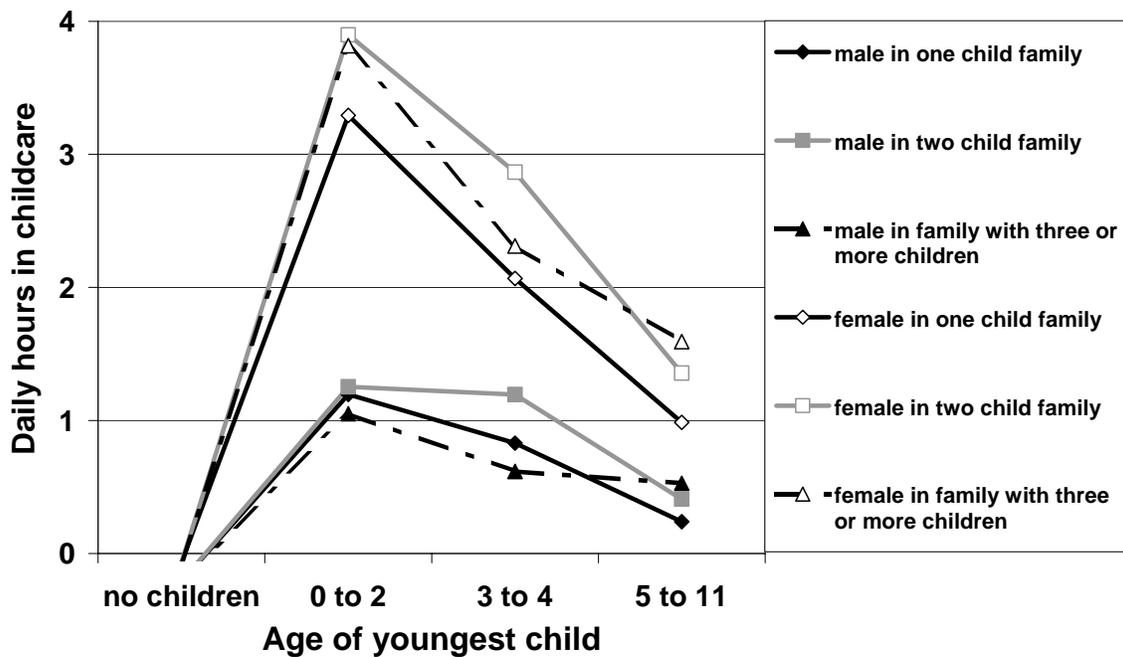
Again echoing the household level analysis, age of the youngest child has the greatest effect on the time women spend in childcare. In one-child families, this time declines steadily and substantially as the child matures. When the child is 3-4, female time in childcare is just over 2 hours a day. While the child is at primary school, female time in childcare is just over an hour a day.

With the addition of subsequent children, big reductions in the time expended on each new child become apparent. Compared with a one-child family, when the youngest child is aged 0-2, the presence of either one or two older siblings is associated with an additional half hour's childcare. Having several children increases a mother's daily childcare time by only 12 per cent beyond that associated with a single child. Along with the decreased absolute time in childcare as children mature, these apparent economies of

scale are less pronounced in families in which the youngest child is aged 5-11. They are still substantial, however. Each extra child in a family in which all the children are above school-entry age adds only about 15 minutes to a mother's childcare time. This amounts to a proportional increase of 25 per cent between a mother of one child and a mother of three-plus children. With a 3-4 year old youngest, there is more female time spent in childcare when there are two children than when there are three or more children. The apparent economies of scale in childcare time are even more remarkable for men. When there is a pre-school child in the family men's participation in childcare is lowest when they have three children. Men are most involved in childcare when they have two children.
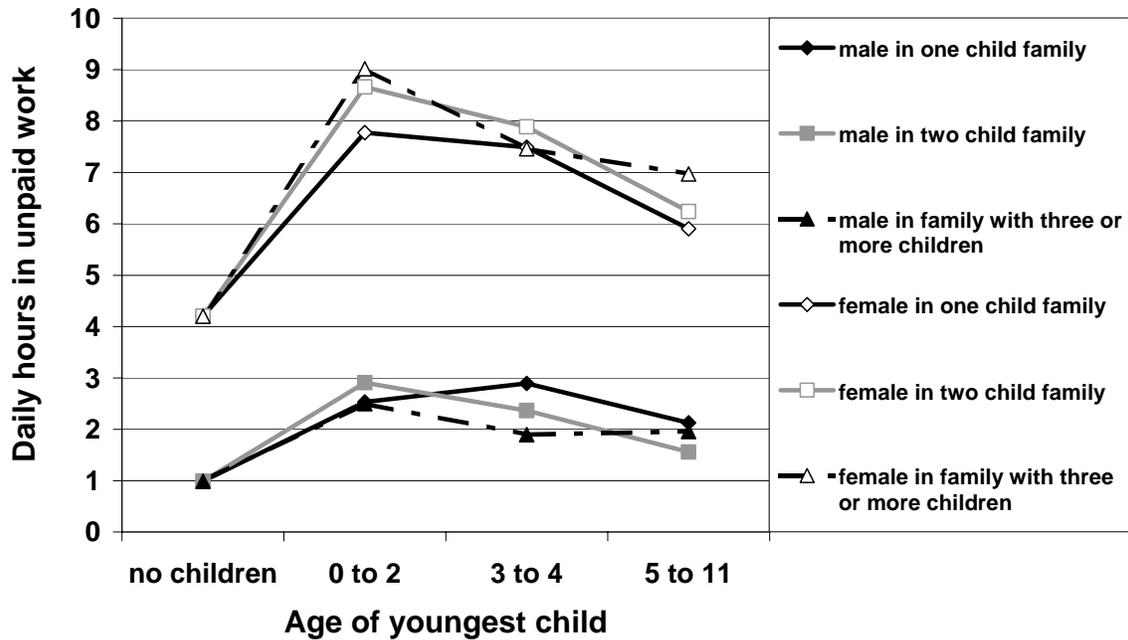
Unpaid work

In Section 3 we found that household unpaid labour increased beyond the amount accounted for by the new demand for childcare. As the foregoing analysis has made apparent, most of the direct childcare time that a household must find following the birth of children is found by reallocating the activities of women. It is of interest to see whether this specialization of activity on the basis of sex is also found in domestic labour other than childcare. We will now look at how variation in family configuration affects intra-household distribution of unpaid labour.

For both sexes, unpaid work approximately doubles with the birth of the first child, as can be seem in. The proportional impact is slightly stronger for men. Having a first child takes male unpaid work time from a base of 50 minutes a day to 2 ½ hours a day. However, as Figure 3.7 makes clear, women in any family configuration do three to four times more unpaid work than men do. The constant term of the regression equation used to estimate time spent in unpaid work by a woman in a couple household in which the male works fulltime is 4½ hours a day. There is an increase of nearly 4 hours upon first motherhood, of which, as we have seen, 3 ½ hours is direct childcare. The presence of one child therefore brings total female unpaid work time to just less than 8 hours a day. So although the proportional increase in unpaid work time concomitant with parenthood is slightly higher for men, the most striking thing is that the absolute quantity of extra hours is so much greater for women. As with direct childcare, female input accounts for about three-quarters of the unpaid work time found at household level following the birth of a first child.

Further, the increase in male time spent in unpaid work following the birth of a baby is allocated to direct childcare and not to other forms of unpaid labour. We found that this was the case in almost all family configurations. The exceptions were two-child families with an infant, and families with an only child aged between 3 and 11 years. In these families there is a small but significant increase in male unpaid work beyond that allocated to childcare. In all other families, the increase in male time in unpaid work was entirely directed into childcare activities. In contrast, mothers of an infant allocate nearly half an hour per day more than childless women to unpaid work as well as 3 ½ hours to direct childcare. Although female unpaid work declines as the children grow, the fall is not so steep as for childcare alone, because for women the proportion of other domestic tasks to childcare increases as the child matures.

Figure 3.7: Predicted male and female time spent in unpaid work by number of children and the age of the youngest child

In this instance, the female pattern for all unpaid work differs more from the household pattern than is the case with childcare only. While women seem to benefit from powerful economies of scale, they do not show the same reduction in unpaid work that was associated with having three-plus children at the household level. For women, the impact of family size is at least as important as the age of the children. Each extra child is associated with slight increase in female unpaid work time at every age except when the youngest child is aged 3-4 years.

Broadly speaking, male time allocation to housework is higher the fewer children there are. When men are fathers of an infant, slightly more unpaid work is associated with having two children, but having three children is associated with the same amount of unpaid work as is one child. Men with a youngest child aged between 3 and 11 years do more unpaid work when that child has no siblings than when there are more children in the family. These findings show that the male withdrawal of unpaid work in larger families is strong enough to, at household level, outweigh the increased input of resources by women with additional children. The increase in male time in unpaid work following the transition to parenthood is almost entirely composed of time spent in direct childcare, so that it is women who contribute almost all the increased household time spent in shopping cleaning or cooking.

Total Primary Productive Activity (both paid and unpaid)

Figure 3.8 shows that while parents' total workload is greater than couples with no non-resident parents, there appears to greater gender equity in total (primary) workload than in unpaid work. There are subtle differences in pattern by gender.

Figure 3.8: Predicted male and female time spent in total (paid and unpaid) work by number of children and age of the youngest child
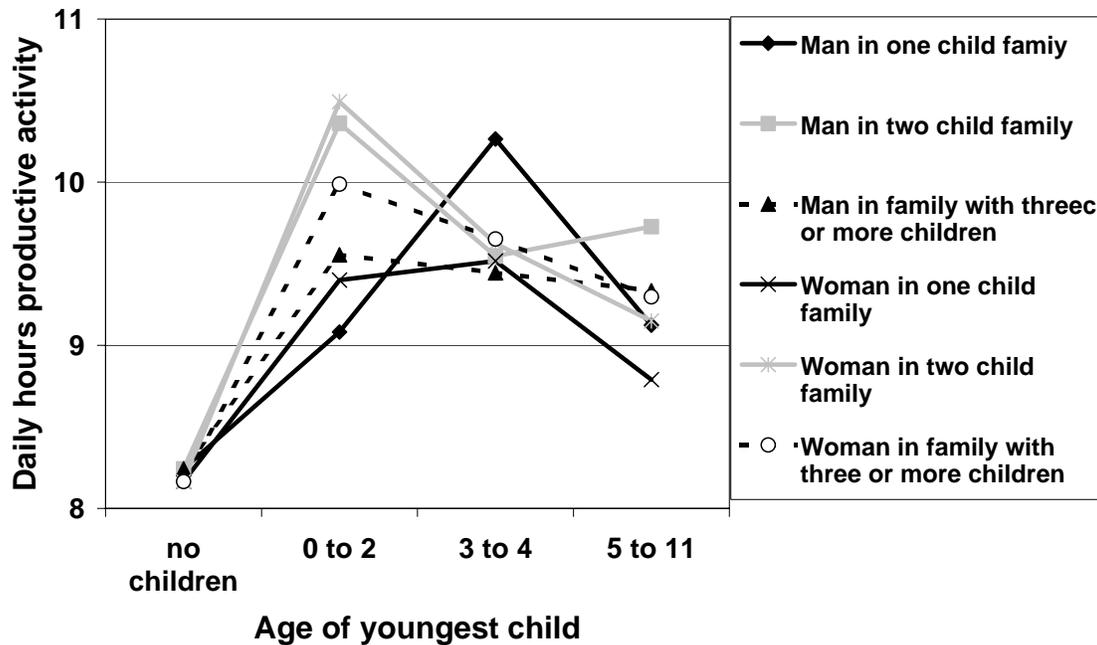
The increase in total female workload following the birth of the first child is about an hour and a quarter a day. A new first time mother does about 9 ½ hours a day total paid and unpaid as a primary activity, 16 per cent more work than a woman without children. A second child brings maternal workload to a total of 10 ½ hours or 23 per cent more than the average workload of childless women. The major influence on women's total time in productive activity is whether they have a child at all, and what age the child is.

The presence of a first child does not predict quite as large an increase in men's work time as in women's. At 50 minutes, the time impact on men's total work of a first child is 75 per cent of the time impact on women. It also represents a somewhat smaller proportionate increase on male workload than is the case for females. The birth of a first child is associated with an increase in male workload of 10 per cent.

However among men, having two children, the youngest aged 0-2 years, is associated with a doubling of the impact of one child the same age. This brings the proportional increase over a childless man's workload to 20 per cent. Having an only child aged 3-4 years brings the same increase in total work time. Apart from the family configurations

just mentioned, there is little variation in male workload with age of the youngest child or with more children in the family. With a youngest child aged 3-4 years, men spend least time in total work when there are three or more children, and most time when it is an only child.

It seems that parenthood brings greater work commitment for both sexes, but as at the household level, that this is in total much less than the increase in unpaid work and its subset childcare. We found then that households were reallocating time towards unpaid work from paid work, recreation and leisure, and personal care activities. Time use analysis allows us to investigate how this reordering of time commitments is divided between couples.

Sources of the time redirected to unpaid work and childcare by sex.

Overwhelmingly, it is women's employment time that is affected by family configuration. Household reduction in paid employment following the birth of children comes from female withdrawal from paid work. Male employment time is largely unaffected, either positively or negatively. In only two family configurations is male time spent in paid employment significant different to that of childless men. Men with one infant spend an hour less paid work than childless men, and men with two children at primary school about 50 minutes more. In contrast, *all* mothers spend statistically significantly less time in paid employment than childless women. Both the age and the number of children influence the time reduction. Predictably, the younger the child(ren), the less time a woman spends in paid employment, but also, having three or more children is, with an infant or primary school age youngest, associated with a further hours reduction in paid employment time than having fewer children in the same age-group.

Typically Australian women spend longer in personal care activities, including sleep, than Australian men do. Men with no children average nearly an hour less personal care than women with no children. But parenthood considerably narrows the gap, and the more children there are in the family, the stronger this finding is. The sleep loss for men ranges from 20 minutes to 50 minutes a day, but there is no pattern that relates to family configuration. Women lose between 36 minutes and 1¾ hours a day, and each child further erodes maternal personal care time.

The effect on recreation time following parenthood is very different for each sex. The only family configuration that is associated with a reduction in male recreation time is two children. The amount of recreation time lost becomes less as the children mature, but having two children of any age is associated with a reduction of male recreation time of between 27 minutes and an hour. As no other family configuration has this effect on male time, and a similar pattern of reduction was not found in personal care time or in employment time, it seems that this recreation and leisure time is the source of the greater paternal childcare time identified above in families with two children.

When their children are preschoolers, women also sacrifice most leisure time when they have two children. But there is a major difference on the basis of sex; whereas men are losing leisure time only when they have two children, women are losing it in all family

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configurations except one child families with a toddler. In all cases the lost female leisure and recreation time is greater than the male.

Figure 3.9: Comparison of predicted time of males and females in total productive activity (both primary and secondary)
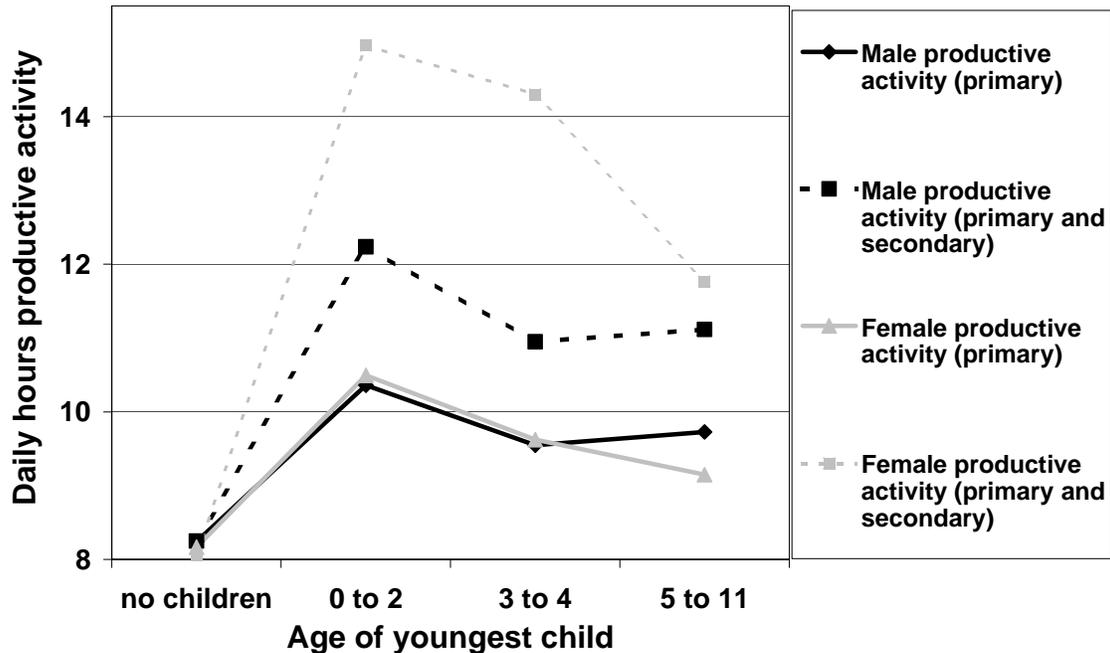
Figure 3.9 reproduces as the solid lines those representing the two-child family in Figure 3.8 and adds the count of productive activity as either a primary or secondary activity[i] as the dotted lines. The black lines represent male time and the grey lines represent female time.

Figure 3.9 illustrates several findings. First, it confirms the magnitude of the underestimation of parental time commitment that results from analysing primary activity only. Second is that the total workloads of childless couples are broadly equal, whether or not secondary activity is acknowledged, largely because secondary activity is negligible in these households. The third is that the broad gender equity in total workload found for mothers and fathers in Figure 3.8 does not pertain if secondary activity is included in the calculation. A fourth finding is that secondary activity is not absorbed into a mother's workload by compensating reduction in other activities, but simply adds to the workload.

Taking each of these points in turn Figure 3.9 shows the powerful effect of parenthood on time commitment and its differential effects by gender. Childless men and women not only spend about the same time in unpaid work as a primary activity, but also are broadly equal when secondary activity is included in the count. Indeed, childless people of either sex only do a tiny amount of work as a secondary activity. Thus the differences between parents and non-parents in time commitment are greater than those indicated by analysing

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primary activity only. Fathers of two children, one of whom is an infant, have a primary activity workload about 20 per cent higher than that of a childless man. If secondary activity is also counted, the father's workload is 32 per cent higher than that of his childless counterpart. The discrepancy in workload is even more marked between mothers and childless women. Mothers have a much higher time commitment than women without children. When primary activity only is counted, the margin between childless women and mothers of two in total workload is 22 per cent. When secondary activity is included; the margin in productive activity between childless women and mothers is nearly 100 per cent. On this measure, female total workload is doubled following parenthood.

Second, it is apparent that excluding secondary activity grossly underestimates the amount of time parents spend in productive activity. The mother of two children, the youngest of whom is an infant, spends 10½ hours a day in paid and unpaid work as primary activity. When secondary activity is included, she averages just under 15 hours a day in productive activity. When a mother of two has a youngest child aged 3-4, her workload as a primary activity averages 9 hours and 40 minutes; her workload including secondary activity averages 14 hours and 20 minutes. So taking no account of secondary activity underestimates the time commitment of a mother with pre-school children by between 30 per cent and 40 per cent. When her youngest child goes to school, total work as a primary activity takes up 9 hours and 10 minutes a day of a mother's time. When secondary activity is included, she has a workload that absorbs 11 ¾ hours a day. Excluding secondary activity would underestimate her workload by 25 per cent. Fathers also do more work as a secondary activity but the amount, both in total and as a proportion of their primary activity, is much less. Fathers of two spend about and hour and three quarters a day more in work activities when secondary activity is included than if primary activity alone is counted. There is little variation with the age of the youngest child; in all cases, excluding secondary activity undercounts male time in productive activity by 15 per cent.

Third, it is clear that when secondary activity is included in the count of total productive activity, mothers' time commitment is much higher than fathers'. The total amount of work is not even between the sexes. Figure 3.9 shows clearly that the approximate gender equity found with primary activity does not hold when secondary activity is included in the analysis. On average, mothers are working 20 to 25 per cent longer than fathers when there is a pre-school child in the family, though this is reduced to nearer 6 per cent when the youngest child is at primary school.

The simultaneous unpaid work activity that people undertake following the transition to parenthood is not absorbed into their total workload, but added to it.

4   Conclusion

In this study, we have loosely adopted a marginal costs approach to establishing the time costs of children. We have used a difference model of daily adult time in total paid and unpaid work as a basis for comparison of welfare across household types. We attempt this marginal cost comparison quantified in the metric of daily workload because the current

social problem of balancing work and family is perhaps more about significant time constraints than about the scarcity of money resources. Expenditure equivalence scales aim to account for economies of scale in household size, price-like substitution effects and intra-household allocation of resources. This study found that these were also of relevance to the daily time cost of children.

There are big entry costs to parenthood. The biggest time demand comes with the birth of the first child. As with monetary expenditure on children, there are considerable apparent economies of scale in time cost per child. The amount of time allocated to childcare with the birth of the first child is much greater than the amount allocated for each additional child. There is a fall as the children age, particularly at school entry.

Monetary expenditure on children goes beyond the amount needed to buy child-specific goods and services. They occasion extra outlay on shared items such as housing and transport. This study found that, similarly, the extra time requirements of children go beyond straight childcare. Their presence is also associated with increased time in other unpaid labour. As children age, proportionately more time is directed to the associated unpaid work than into actual childcare.

Research into the financial costs of children has found that households redirect spending towards child-related expenditure. Similarly, we found contributions towards the unpaid work associated with children from other types of time-use. Household level analysis showed that the presence of children places an enormous demand on household non-market labour time resources.

Of interest is how households, with all the possibilities of sharing or specialization open to them, manage the distribution of the extra work time requirement occasioned by the presence of children. A major weakness of financial equivalence scales is their lack of ability to investigate this issue of the intra-household allocation of resources. Standard economic research has relied on unproven assumptions of equal sharing, or treated the household as having a joint utility function. Australian time-use data are not subject to this constraint, and we find that the time costs of children, as represented in workload, impact upon both parents but are not equally shared.

The presence of children deepens the division of domestic labour. Women are contributing the bulk of the large household time allocation to childcare and unpaid work that follows the birth of the first child. They are doing this by adding extra time to their workload by redirecting sleep and leisure time into unpaid work time, and by substituting time previously spent in paid work into unpaid work time. Men are adding some extra time to their total workload, although the increase in male total work time following the birth of a child is less than the increase in female total work time. Males' higher work time is allocated to paid work and some childcare. They are rarely contributing more domestic labour.

This calculation of the difference in time commitment between families with no children and families with different numbers of children gives a measure of the heavy time pressure associated with work and family demands. It has shown that the time increases

associated with children found at household level are largely met by adjustments on the part of women. The consequences of the decision to become a mother are vastly different from the consequences of the decision to become a father.

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Appendix A

Regression Coefficients

Model 1: Households

	Childcare	Unpaid work	Total work (primary)	Total work (primary and secondary
	B	B	B	B
(Constant)	-0.149	5.941***	15.538**8	15.168***
One child aged 0-2	4.710***	5.056***	2.085***	7.593***
Two children, youngest aged 0-2	5.612***	6.546***	4.157***	10.206***
Three or more children, youngest aged 0-2	5.195***	6.161***	3.029***	8.693***
One child aged 3-4	3.181***	4.802***	3.305***	8.313***
Two children, youngest aged 3-4	4.328***	4.794***	3.099***	9.396***
Three or more children, youngest aged 3-4	3.291***	4.060***	2.385***	8.980***
One child aged 5-11	1.418***	2.251***	1.244**	4.433***
Two children, youngest aged 5-11	2.044***	2.056***	2.270***	6.289***
Three or more children, youngest aged 5-11	2.566***	3.362***	2.379***	5.833***
Wife is aged 25-34	-0.004	-0.787**	0.324	0.161
Wife is aged 45-54	0.036	0.280	0.361	0.220
Husband is aged 25-34	-0.133	-0.493	0.067	0.086
Husband is aged 45-54	-0.149	0.124	-0.306	-0.413
Both partners university educated	0.487***	0.415	1.249***	2.386***
Both partners have vocational qualifications	0.278	0.561	1.268***	2.084***
One partner university educated, other has vocational qualifications	0.208	0.459	-0.993	-1.619
One partner university educated, other has no qualifications	0.384	0.349	0.313	1.527**
One partner has vocational qualifications, other has no qualifications	0.076	0.143	0.833*	1.281**
Both partners work fulltime	-0.185	-1.202***	N/A	
Husband works full time, wife not employed	0.310*	0.772**	N/A	
Husband not in fulltime work, other arrangements	0.253	0.609	N/A	
Total weekly household income	0.000	0.000	0.002***	0.002***
Disabled person in household	-0.012	0.342	-0.400	-0.421
Hours a week child spends in day care	-0.027***	-0.047***	0.001	-0.045*
Both diary days weekend	-0.032	2.143***	-6.530***	-5.484***
Diary from Saturday and weekday	-0.017	1.207***	-3.917***	-3.076***
Diary from Sunday and weekday	-0.110	1.043***	-3.720**8	-2.687***
R square	0.600	0.404	0.320	0.405

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.001

Model 2: Men in couple families

	Childcare	Unpaid work	Total work (primary)	Total work (primary and secondary
			B	
(Constant)	-0.274	0.863***	7.504***	7.362***
One child aged 0-2	1.404***	1.545***	0.839**	2.411***
Two children, youngest aged 0-2	1.461***	1.920***	2.118***	3.988***
Three or more children, youngest aged 0-2	1.259***	1.513***	1.312***	3.184***
One child aged 3-4	1.038***	1.907***	2.023***	3.337***
Two children, youngest aged 3-4	1.403***	1.375***	1.305***	2.698***
Three or more children, youngest aged 3-4	0.825***	0.912***	1.202**	2.981***
One child aged 5-11	0.448***	1.138***	0.881**	1.864***
Two children, youngest aged 5-11	0.617***	0.571***	1.484***	2.867***
Three or more children, youngest aged 5-11	0.736***	0.971***	1.092***	2.114***
Aged 25-34	-0.125*	-0.169	0.288	-0.053
Aged 45-54	-0.071	0.508**	-0.506*	-0.640**
Has postgraduate qualification	0.283**	0.345	-0.190	0.457
Has a bachelor degree	0.248**	0.513**	0.358	1.037***
Has university diploma	0.107	0.194	0.456	0.714*
Has skilled vocational qualifications	0.053	0.174	0.742***	0.821***
Has basic vocational qualifications	-0.043	-0.168	0.993	1.466*
Usual hours worked by wife/partner	0.003	0.006	0.011	0.020**
Employed part time	0.381**	0.709**	N/A	N/A
Not employed	0.461***	1.491***	N/A	N/A
Total weekly income	0.000	0.000	0.001***	0.001***
Disabled person in household	0.017	0.357**	0.084	0.128
Hours child usually attends day care	-0.004	-0.006	-0.009	-0.017
Saturday	0.126	1.722***	-3.315***	-2.536***
Sunday	0.334***	1.891***	-4.009***	-3.084***
R square	0.213	0.188	0.248	0.278

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.001

Model 3: Women in couple families

	Childcare	Unpaid work	Total work (primary)	Total work (primary and secondary
	B	B	B	B
(Constant)	-0.249	3.742***	7.447***	6.964***
One child under 15 aged 0-2	3.358***	3.571***	1.236***	5.507***
Two children, youngest aged0-2	3.964***	4.464***	2.330***	6.906***
Three or more children youngest aged 0-2	3.883***	4.816***	1.824***	6.077***
One child aged 3-4	2.134***	3.288***	1.352**	5.452***
Two children, youngest aged 3-4	2.932***	3.686***	1.460***	6.243***
Three or more children, youngest aged 3-4	2.377***	3.257***	1.487***	6.441***
One child aged 5-11	1.052***	1.700***	0.626*	3.097***
Two children, youngest aged5-11	1.423***	2.034***	0.985***	3.708***
Three or more children youngest aged 5-11	1.658***	2.771***	1.134***	3.591***
Aged 25-34	0.051	-0.276	-0.021	0.107
Aged 45-54	-0.042	0.433	-0.163	0.176
Has postgraduate qualification	0.353*	-0.362	0.676	1.037**
Has a bachelor degree	0.233*	0.075	0.375	0.761**
Has university diploma	0.363**	0.313	0.684	1.431***
Has skilled vocational qualifications	0.238*	0.151	0.155	0.398
Has basic vocational qualifications	-0.007	0.269	0.508	0.661
Usual hours worked by husband /partner)	0.005	0.012**	0.010*	0.018**
Employed fulltime .	-0.181	-1.358***	N/A	N/A
Not employed	0.478***	0.944***	N/A	N/A
Total weekly income	0.000	0.000	0.001	0.001***
Disabled person in household .	-0.015	0.052	-0.307	-0.468**
Hours child usually attends day care	-0.024***	-0.035***	0.006**	-0.042***
Saturday	-0.170	0.493**	-2.159***	-1.664***
Sunday	-0.310**	-0.168	-2.616***	-2.101***
R square	0.492	0.375	0.197	0.317

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.001

Model 4: Mothers childcare (hours a day)

	Childcare (primary)	Childcare (primary or secondary)
	B	
(Constant)	2.953***	6.012***
Single parent of dependent children	0.260	1.379**
Aged 25-34	0.230*	0.533*
Aged 45-54	0.077	0.331
Has postgraduate qualification	0.505*	0.944*
Has a bachelor degree	0.283	0.906**
Has university diploma	0.612***	1.755***
Has skilled vocational qualifications	0.361**	0.767**
Has basic vocational qualifications	0.118	0.253
Usual hours worked by husband/partner.	0.008	0.020**
Total weekly income	0.000*	0.000
Hours child usually attends day care	-0.027***	-0.064***
Disabled person in household.	0.007	-0.421
Number of children under 15 years in household	0.232***	0.363**
Youngest child aged 5-11	-1.999***	-3.616***
Saturday	-0.313*	0.325
Sunday	-0.451**	0.165
R square	0.236	0.202

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.0005

Model 7: Fathers childcare (hours a day)

	Childcare (primary)	Childcare (primary or secondary)
	B	B
(Constant)	0.869***	1.373***
Aged 25-34	-0.069	-0.220
Aged 45-54	-0.120	-0.306
Has postgraduate qualification	0.359*	1.207***
Has a bachelor degree	0.342**	1.185***
Has university diploma	0.147	0.583*
Has skilled vocational qualifications	0.101	0.271
Has basic vocational qualifications	0.009	0.881
Usual hours worked by wife/partner	0.005*	0.019***
Employed part time	0.526**	1.270***
Not employed	0.558***	1.472***
Total weekly income	0.000	0.000
Hours child usually attends day care	-0.003	-0.016*
Disabled person in household.	0.017	0.157
Youngest child aged 5-11	-0.672***	-1.192***
Number of children under 15 years in household	0.027	0.105
Saturday	0.224*	1.060***
Sunday	0.476***	1.644***
R square	.099	.135

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.0005

Model 6 continued: Mothers time in childcare subcategories in minutes a day

	Physical care (primary)	Minding children (primary and secondary)	Interactive care (primary)	Interactive (primary and secondary	Travel and communication (primary)
	B	B	B	B	B
(Constant)	95.166***	205.890***	53.792***	81.682***	4.986
Single parent of dependent children	3.254	53.392*	-6.180	21.556*	13.331**
Aged 25-34	23.796***	26.078	-2.033	-8.024	-1.812
Aged 45-54	2.225	23.494	-2.397	-14.652	-3.377
Has postgraduate qualification	22.891*	25.396	10.866*	24.696	-2.609
Has a bachelor degree	9.234	33.594	6.476	18.705	3.304
Has university diploma	15.837*	89.597***	11.398**	4.786	1.280
Has skilled vocational qualifications	22.759***	34.912*	1.871	2.490	-6.091*
Has basic vocational qualifications	16.270	26.171	3.466	-6.969	-11.974**
Usual hours worked by husband/partner	0.259	0.524	-0.124	0.359	0.356***
Total weekly income	-0.009	-0.018	-0.004	0.009	-0.003
Hours child usually attends day care	-1.320***	-1.819***	-0.299**	-1.230***	0.090
Disabled person in household.	-0.853	-16.702	-5.209*	-13.094*	1.214
Youngest child aged 5-11	-86.781***	-136.934***	-18.231***	-28.968***	2.874
Number of children under 15 years in household	4.798	1.423	-0.905	11.357***	7.939***
Saturday	-7.094	55.693**	2.200	-9.198	-17.688***
Sunday	-5.121	62.491***	-2.019	-16.562*	-24.03***1
R square	.248	.107	.049	.052	.100

Source: ANS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.0005

Model 7 continued: Fathers time in childcare subcategories in minutes a day

	Physical care (primary)	Minding children (primary and secondary)	Interactive care (primary)	Interactive (primary and secondary	Travel and communication (primary)
	B	B	B	B	B
(Constant)	8.131	48.355**	25.877***	34.815***	-0.405
Aged 25-34	2.901	-19.947*	1.122	1.531	-0.828
Aged 45-54	-0.937	-15.502	-4.052	-5.622	0.823
Has postgraduate qualification	2.150	49.833**	9.128	20.235**	3.166
Has a bachelor degree	11.244**	42.062**	9.024**	17.358**	2.143
Has university diploma	3.873	23.933	6.692	9.136	-0.995
Has skilled vocational qualifications	0.805	11.945	2.439	3.057	1.209
Has basic vocational qualifications	9.236	33.946	-1.962	9.011	-5.284
Usual hours worked by wife/partner	0.146*	0.827**	0.002	0.075	0.093*
Employed part time	11.879**	51.951**	7.059	10.824	1.747
Not employed	8.155*	61.306***	17.765***	19.250**	4.188
Total weekly income	0.005	0.018	0.002	0.004	-0.001
Hours child usually attends day care	-0.005	-0.883**	-0.076	-0.175	0.116
Disabled person in household.	3.242	3.005	-3.213	-0.262	2.127
Youngest child aged 5-11	-18.449***	-47.130***	-13.431***	-14.542**	1.243
Number of children under 15 years in household	2.798*	0.847	-2.448	0.574	2.306**
Saturday	4.467	46.804***	4.879	16.332**	-1.149
Sunday	6.851*	65.535***	14.344***	29.574***	-1.078
R square	.086	.080	.075	.055	.024

Source: AbS Time Use Survey 1997   * P<.05 ** P<.01 ***P<.0005

Base OLS Regression Model (adults aged 25-54)

Dependent variables (hours per day)	Mean	Standard deviation	Number
Household time spent in childcare	2.08	2.63	1210
Household time spent in unpaid work	8.50	4.20	1210
Household time spent in total work (paid and unpaid) as a primary activity	17.93	5.39	1210
Male time spent in unpaid work	2.71	2.67	2067
Male time spent in total work (paid and unpaid) as a primary activity	9.23	3.86	2067
Male time spent in paid and unpaid work as either a primary or a secondary activity	10.34	4.09	2067
Female time spent in unpaid work	6.08	3.45	2207
Female time spent in total work (paid and unpaid) as a primary activity	8.87	3.33	2207
Female time spent in total work as either a primary or a secondary activity	11.39	4.79	2207
Mothers time spent in childcare (primary)	2.50	2.17	1708
Fathers time spent in childcare (primary)	0.97	1.35	1459
Fathers time spent in childcare as either a primary or secondary activity	2.12	2. 09	1459

Independent variables of interest
One child aged 0-2 (yes=1)
Two children, youngest aged 0-2 (yes=1)
Three or more children, youngest aged 0-2 (yes=1)
One child aged 3-4 (yes=1)
Two children, youngest aged 3-4 (yes=1)
Three or more children, youngest aged 3-4 (yes=1)
One child aged 5-11 (yes=1)
Two children, youngest aged 5-11 (yes=1)
Three or more children, youngest aged 5-11 (yes=1)

Independent variables
Wife is aged 25-34(yes=1)
Wife is aged 45-54 (yes=1)
Husband is aged 25-34 (yes=1)
Husband is aged 45-54 (yes=1)
Both partners university educated (yes=1)
Both partners have vocational qualifications (yes=1)
One partner university educated, other has vocational qualifications (yes=1)*
One partner university educated, other has no qualifications (yes=1)*
One partner has vocational qualifications, other has no qualifications (yes=1)*
Total weekly household income (mean=$A1003 Standard Deviation= $A474)

Spouse's hours in paid work=
Postgraduate qualification (yes=1)=
Bachelor degree (yes=1)=
University diploma (yes=1) =
Skilled vocational qualifications (yes=1)=
Basic vocational qualifications (yes=1)=
Disabled person in household (yes=1)
Hours a week child spends in day care
Both diary days weekend (yes=1)
Diary from Saturday and weekday (yes=1)
Diary from Sunday and weekday (yes=1)

* Used in estimates of household time only
= Used in estimates of individuals