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The Impact of Age of Children on Decision Making Over Time Use in Couple Families

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Abstract

This paper examines the links between the time allocations of partners in couple families, and the impact of children on these links. The analyses are conducted on samples separated according to the age of the youngest child. In childless couple families the time allocations of partners have complementary relationships. In couple families with only older (than 12 years) children, the time allocations of partners appear to be independent. In contrast, in couple families with younger children the time allocated to home duties and employment-related activities by the partners are substitutes. Children therefore affect the time allocation decisions in couple families through reducing the apparent complementarity in time allocations of their parents.

JEL classification: J160; J220; J290

1. Introduction

It is well known that partners in couple families specialise in particular time use activities, males in employment-related activities and females in home duties and child care. What is not understood at present, however, is how this specialisation arises. The information provided in the current paper is on whether the specialisation arises simply through unilateral decision-making by members of couple families as a reflection of their specific circumstances, or because they take account of the time allocation decisions of their partner when undertaking their own time budgeting.

These issues are examined through study of the links between partners' time allocations to broad categories of time use, namely employment-related activities, home duties, child care, and leisure. The analyses are presented separately for couple families without children, and for couple families with children. The latter analyses are undertaken by the age of the youngest child. Craig and Sawrikar (2009) undertake analyses of an earlier data set according to the school stage of the youngest child, and their results show that this disaggregated approach is very useful. Only the broad linkages during the typical working week are addressed, although it is recognised that the relationships between partners' non-standard work hours and the times partners

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allocate to employment-related activities, home duties, child care and leisure (Craig and Powell, 2011), as well as the synchronisation of time allocations within a given time period (Hallberg, 2003), could be addressed using the same framework. The results from the study will enhance understanding of the behavioural responses to the presence of children, particularly young children, and hence contribute to the debate over the societal coercion of women to engage in unpaid household work. The results should also provide a basis for discussion of the broader implications of women's traditional specialisation in this household work, such as for the disadvantages women may face under accumulation-based superannuation schemes (Smith, 2007).

The analyses presented are based on the Time Use Survey conducted by the Australian Bureau of Statistics in 2006. While the primary aim of the research is to provide information on the impact of children on decision making within couple families in Australia, the results will have international appeal: Sevilla-Sanz (2010) shows that Australia was ranked last among 13 developed countries on the basis of her country egalitarian index that was constructed to capture social norms. The research is presented in four main sections, following this introduction. Section 2 covers a number of methodological considerations, including the general contextual framework and the econometric specification. Section 3 provides a brief description of the data. This section also contains descriptive statistics on the time allocations of several family types. Section 4 presents and discusses the empirical results, from the main set of models, and from the various sensitivity tests. Concluding comments are offered in Section 5.

2. Methodological Considerations

Conceptual Framework

A recurring theme in research on time allocations is the effects of the spouse's characteristics on the decisions of the partner in couple families. In many studies this is reflected in the inclusion of the spouse's wage rate in models of labour supply (*e.g.*, Blau and Kahn, 2007). This specification of the estimating equation permits assessment of whether husband's and wife's time allocations are substitutes or complements (Ashenfelter and Heckman, 1994). Blau and Kahn (2007) report that husband's wages have a negative impact in their model of married female's labour supply. That is, a substitute relationship prevails.

In other studies, models of the determinants of the time allocations to market work and non-paid time activities of partners in couple families are estimated jointly, and the correlation between the error terms in the various time use equations is used to inform on the relationships between the time allocations of the spouses. Bloemen, Pasqua and Stancanelli (2010), for example, examine the influences on labour market work, child care and home duties of partners in couple families with children. These equations were estimated for the two spouses within each household jointly. They reported that the unobservable influences on the market work and child care time allocations of spouses were positively correlated (that is, these activities were complementary) whereas the unobservable influences for home duties of the spouses were negatively correlated (that is, there was a substitute relationship for these activities).

A more direct approach to the analysis has also been taken, where variables for the times spent in various activities of the spouse are included in the estimating equation for the other member of a couple family. The sign of the coefficient on the

variable for the spouse's allocation of time to the same activity provides information on the substitutability or complementarity of the partners' time allocations, as well as information on the way time allocations within couple families respond to particular sets of family circumstances. Craig and Powell's (2011) model follows this approach. They include variables for the partner's non-standard hours of work activity in models of the individual's allocation of time to paid work, domestic work, childcare and routine work. These equations were estimated using OLS. It was reported that fathers' time allocations were not influenced in a statistically significant way by their spouse's non-standard work schedule, whereas mothers' time allocations were affected in this regard.

A wider set of influences is considered using this 'direct' approach by Connelly and Kimmel (2009), who examined the time allocated to leisure, care-giving and home production in couple families with children. Their SUR Tobit system for these three time uses was estimated separately for mothers and fathers.[1] Connelly and Kimmel (2009) report that husband's and wife's leisure times are complementary, whereas the care-giving and home production times of spouses were largely unrelated. A similar approach is taken by Hallberg and Klevmarken (2003) in their examination of the time allocated to child care by partners in couple families. They focused on couples with children, where both parents work, and estimated their child care equations using three-stage least squares. Comparisons with OLS estimations were presented. The times allocated to child care by partners in couple families where both parents worked were found to be strongly complementary.

The divergent findings in this research could reflect the different approaches to estimation. They could also reflect institutional differences across the countries studied. Connelly and Kimmel (2009) focus on the US, Hallberg and Klevmarken (2003) examine data for Sweden, Bloemen, Pasqua and Stancanelli (2010) examine Italian couples while the focus of the study by Craig and Powell (2011) was Australia. The differences in findings across the studies could, however, simply reflect differences in the composition of the sample. For example, Connelly and Kimmel (2009) restrict their sample to couple families where there is a child under the age of 13, and Bloemen, Pasqua and Stancanelli (2010) apply the older cut off of 'younger than 19'. While the models generally include controls for the age structure of children, these are simple intercept shift terms. The age structure of children could also impact on slope coefficients. In other words, young children may have a different impact on the interdependence of spouses' time allocation decisions than older children.

Econometric Specification

The estimating equation employed in this study is based on Connelly and Kimmel (2009) and Birch, Le and Miller (2009). Thus, the time allocated to the j^{th} time use by partner i in a couple family (t_{ji}) is related to their personal characteristics (X_i), household characteristics (H_i), and their spouse's time allocation to the same activity ($t_{j,-i}$). Hence,

[1] The estimating equation included variables for the predicted usual weekly employment hours and non-paid time allocations of the spouse, as well as a predicted own usual weekly employment hours variable. Separate systems analyses were undertaken for mothers and fathers, as the data set used did not include the non-paid time allocations of the respondent's spouse. Instead, these had to be either predicted or derived using a matching algorithm. This is not a limitation of the data set used in the current set of analyses.

$$t_{ji} = \beta_{0j} X_i + \beta_{1j} H_i + \beta_{2j} t_{j,-i} + \varepsilon_{ji} \quad (1)$$

Note that, unlike Connelly and Kimmel (2009), equation (1) does not include multiple time uses as explanatory variables. Connelly and Kimmel (2009) include variables for the spouse's usual weekly work hours, and for the times allocated to leisure, child care and home production in the partner's non-paid time use equations (namely, for leisure, child care and home production). Hallberg and Klevmarken (2003) consider the spouse's time with children and the spouse's home production time, together with the own home production time, in their model of child care time. However, Connelly and Kimmel (2009) conclude that spouses' activities have only a small effect on a partner's time use choices. Similarly, Birch *et al*.'s (2009) preliminary analyses of multiple time uses led them to focus on the time allocations of partners to the same activity. The focus on a single activity as an explanatory variable provides a suitable testing ground to ascertain patterns of complementarity and substitutability across family types.

There are a number of studies that similarly include a single variable for the spouse's time allocation in the partner's time use equation. Bittman, England, Sayer, Folbre and Metheson (2003), Craig and Powell (2011), Sharp, Heath, Smith and Knowlton (2004) and Siminski (2006) are some examples, though the analyses in these studies were only for an aggregate of all couple families, and typically had a focus on the links between the time allocated to home duties by an individual and the times they and their spouse allocated to employment-related activities.[2] More closely related to the framework adopted in the current study is the research by Alenezi and Walden (2004), Duguet and Simonnet (2007), Le and Miller (2010) and Sharp *et al*. (2004). Alenezi and Walden (2004) include the spouse's employment status in models of the individual's hours of market work. Duguet and Simonnet (2007) model the labour force participation decision with the labour participation status of the partner as an explanatory variable. Le and Miller (2010) use the husband's (wife's) time allocated to a particular activity when accounting for the time allocated to the same activity by the wife (husband). Similarly, Sharp *et al*. (2004) include the time allocated to home duties by the husband in a model of the wife's hours of housework. The approach followed in these studies can be rationalised as being based on informal non-cooperative game-theoretic modelling of household decision making (for relevant discussion, see Seiz, 1991, 1995), where the spouse's time allocation to a particular activity is taken as given when the individual determines their desired allocation of time to that activity.[3] For example, the person might assume that their spouse will engage in h^s hours of home duties, and on this basis they decide to undertake h^i hours of home duties. Of course, the spouse may engage in fewer or more than h^s hours of home duties, which will necessitate an adjustment to the planned hours of home duties of the respondent. This reasoning is similar to that used in the Cournot model of oligopoly. A reaction curve representation of the outcomes is presented in section 4.

[2] For discussion of the merits of including paid work time in a model of home duties, see Jenkins and O'Leary (1995). As noted above, Craig and Powell (2011) examine the impact of the spouse's non-standard work activity on a number of specific time use activities of the individual.

[3] In could also be viewed as the multiple regression framework simply being used as statistical description without reference to a particular behavioural model (Jenkins and O'Leary, 1995). Hallberg and Klevmarken (2003) provide further interpretation of the model.

The estimating equation does not contain wage variables, either for the husband, wife, or any ratio of these. There are two reasons for this. First, in the closely-related research by Connelly and Kimmel (2009) and Hallberg and Klevmarken (2003), it was found that the times allocated to unpaid work were largely unresponsive to wage variables. Second, while the Time Use Survey in Australia contains wage information, this is available only for the employed. Thus wages need to be imputed for the non-employed. As with Sevilla-Sanz *et al*. (2010, 148), there are no 'useful exclusion restrictions to impute missing earnings for those women out of the labor force, since everything that might be used to impute wages already appears in our time-use regressions'. Kalenkoski, Ribar and Stratton (2007) similarly draw attention to the lack of good instruments for wages in their time use study. In preliminary estimations, an attempt was made to impute wages for the non-employed using multivariate imputation procedures (see Rubin, 1987; Birch *et al*., 2009). However, this approach did not generate values that were considered plausible. In particular, the mean value of the imputed wage for some disadvantaged groups (*e.g*., unemployed, less-well educated) appeared to be unrealistically high. While refinements to the imputations to base the imputed values only on workers with a marginal attachment to the labour force could be considered (similar to Blau and Kahn, 2007), sample size considerations prevented this. Hence, the models presented are reduced forms.

Separate time use equations are estimated for employment-related activities, home duties and leisure time for childless couple families and for couple families with children (disaggregated by the age of the youngest child). Previous studies of the determinants of the time allocated to these activities have included a wide variety of explanatory variables, and the rationale for this extends back to the early work by Gronau (1977). Gronau (1977) extended the traditional study of hours of market work to also include explicit study of hours of home duties and leisure. The optimal allocation of time to these activities was found by maximising a utility function subject to time and budget constraints. Factors that affected preferences for work, home duties and leisure were then included in the estimating equation. This conceptual framework can be used to motivate the specification of the estimating equation in the current study. Thus, the estimating equation for each time use includes variables that capture time allocation preferences, namely age (a quadratic specification), educational attainment (full-time equivalent years of education in the case of post-secondary qualifications), self-reported health status (dichotomous variables for excellent, very good and fair/poor health, with good health as the benchmark group), English proficiency (dichotomous variables for those who speak a language other than English at home and (i) speak English very well or (ii) have poor English skills, with speaks only English at home as the benchmark group), area of residence (three dichotomous variables for quintiles of an index of socioeconomic status of the region of residence, as described in Appendix A), home ownership (a dichotomous variable for home owner, with renters as the benchmark), and, for couple families with children, variables for the age structure of children (dichotomous variables where the youngest dependent child is aged (i) 0-4 years, (ii) 5-12 years, or (iii) 13+ years, with only non-dependent children present as the benchmark), and for the availability of child care (a dichotomous variable equal to one where child care can be arranged at short notice, and set to zero otherwise).

Many of these variables will also capture the influence of wage rates and unearned income in this reduced form specification. Appendix A contains brief descriptions of the variables, along with a table of means for both the dependent and the independent variables. The main set of estimations is undertaken using OLS. The partner's time use variables are instrumented in a further set of estimations. The models are estimated using a Tobit specification as part of the tests of robustness, and linkages across time uses using a seemingly unrelated regression approach are also considered. As systems estimators are sensitive to specification errors, in that a specification error in one equation is transmitted to all other equations in the model, it is preferable, on a priori grounds, to inspect and discuss the single-equation estimates first.

3. Data

The data used in this study are from the Time Use Survey undertaken by the Australian Bureau of Statistics in 2006 (ABS, 2008). These data were collected via means of a time diary approach. There were 3,793 families comprising 6,902 within-scope individuals aged 15 or more years. Most of these individuals provided time diaries for two days, giving a sample of 13,617 diary days. Detailed information was collected on time use, along with standard demographic information. The broad categories of time use that can be examined with these data are: (a) personal care; (b) employment-related; (c) education; (d) domestic; (e) child care; (f) purchasing goods and services; (g) voluntary work and care; (h) social and community interaction; (i) recreation and leisure; and (j) other. These categories are combined into a smaller number for the analyses conducted here. Specifically, the 'domestic' and 'purchasing goods and services' activities are combined to form a 'home duties' category, and the 'social and community interaction' and 'recreation and leisure' activities combined to form a more general 'leisure' category. In addition, 'education', 'voluntary work and care' and 'other', each of which involve relatively minor time allocations, are combined to form a 'residual' category.[4] Only primary time allocations during the usual working week of Monday to Friday are considered.[5]

Table 1 lists the time allocated to each of the major categories of time use. This information is presented for couple families without children (the first column), all couple families with children (the final column), and, for couple families with children, for three family types distinguished by the age of the youngest child (the three central columns). The age groups of 0-4, 5-12 and 13+ are used for this analysis. This choice yields three groups of approximately equal size, where each group is large enough to facilitate the statistical analyses presented in the next section. The top panel of the table is for females, and the bottom panel is for males.

[4] In the case of couple families without children, the minor amounts of time allocated to the care of children are also included in the final residual category.
[5] The Time Use Survey includes information on primary and secondary activities, determined from the responses to the questions 'What is your main activity?', and 'What else were you doing at the same time?'.

Table 1 - Proportional Allocation of Time by Gender and Family Type

		Couple Family with Children			
Time Use	*Couple Family, no Children*	*Youngest Child 0-4*	*Youngest Child 5-12*	*Youngest Child 13+*	*All*
1. Females					
Personal care	45.45	40.85	42.45	44.30	42.49
Employment-related	18.18	8.03	15.46	18.66	13.82
Home duties	15.44	17.98	18.28	18.73	18.32
Child care	-	19.43	8.73	0.84	9.98
Leisure	17.66	12.26	13.19	15.52	13.63
Other	3.26	1.45	1.89	1.96	1.75
Total	100.00	100.00	100.00	100.00	100.00
2. Males					
Personal care	43.61	40.49	40.93	42.60	41.32
Employment-related	28.63	34.72	35.44	30.27	33.45
Home duties	8.44	6.39	5.86	8.95	7.09
Child care	-	6.09	2.93	0.23	3.22
Leisure	17.34	11.32	13.50	16.30	13.62
Other	1.99	1.00	1.33	1.64	1.31
Total	100.00	100.00	100.00	100.00	100.00
Number of families	528	350	307	355	1012

Source: Australian Bureau of Statistics' Time Use Survey, 2006.

It will be apparent from table 1 that the employment-related and home duties/ child care categories are the time allocations where more pronounced differences between childless couple families and couple families with children are evident. Hence, the presence of children is associated with females allocating less time to employment-related activities and more time to home duties and child care. In the case of males, the presence of children is associated with a marked increase in the time allocated to employment-related activities, and a slight increase in the combined time allocated to home duties and child care. Examination of these changes according to the age of the youngest child reveals that the differences between childless families and families with only older children are less pronounced than are the differences between childless families and families with young children.

Comparing the changes in the time allocations associated with the age of the youngest child between females and males shows that these are more pronounced for females. Craig and Powell (2009) report the same pattern, stating (p.693) 'The effect of children's school stage on time allocated to work and family is much more pronounced for mothers'. Moreover, it is apparent that the changes by males and females in the times allocated to employment-related activities and home duties when children are present intensify the gender difference in times allocated to these activities. Thus, the gender gap in the time allocated to employment-related activities rises from 10 percentage points in couple families that do not have children, to 27 percentage points in couple families with a child aged zero to four years. At the same time, the gender gap in the time allocated to home duties increases from seven to 12 percentage points, or from seven to 25 percentage points when child care is included along with home duties in the comparison. As the age of the youngest child increases, the gender differences

in time allocations are reduced. This is largely due to the changes in the allocation of time among females that was noted above. Again, this pattern is similar to that reported by Craig and Powell (2009, p.693), namely that 'the relative time allocation to work and family becomes more similar by sex as the youngest child moves from one school stage to the next'. The reasons behind these broad patterns are explored in the next section.

It is also useful to compare the total time allocations of males and females to the aggregate of 'employment-related activities, home duties and child care'. According to the table 1 data, males allocate more of their time to these combined activities than females; 3.5 percentage points (or about 50 minutes) in the case of couple families without children, two percentage points (or about one half of an hour) more for couple families with children under 13 years, and one percentage point more for couple families with only older children. The gender gap in these comparisons differs from that reported by Craig and Powell (2009), as the latter study includes secondary time allocations in addition to the primary time allocations analysed in the current research.

4. Statistical Analyses

The degree of coordination of the activities of partners in couple families is examined in this study through estimating separate time use equations for employment-related activities, home duties and leisure time for childless couple families and for couple families with children (disaggregated by the age of the youngest child).[6] In the first instance the equations are estimated separately by Ordinary Least Squares.

Detailed empirical results are presented in table 2 (for couple families without children) and in table 3 (for couple families with children) in order to establish the broad patterns in the data. Following this the key findings from analyses according to the age of the youngest child, as well as the sensitivity tests, are discussed. These sensitivity tests involve the use of predicted regressors, a Tobit model, and a seemingly unrelated regression approach.

Aggregate-level Analysis

The models of time allocation presented in tables 2 and 3 have moderate goodness of fit, with between nine and 28 per cent of the variation in time allocation around the mean allocation being accounted for by the 13 explanatory variables in childless couple families, and with between six and 16 per cent of the variation in the time allocations being accounted for by the 17 explanatory variables in the case of couple families with children. In each comparison of like time allocations between the two family types, the explanatory power of the equation for couple families without children exceeds that of the equation for couple families with children. R^2 of these magnitudes are typical in this literature (see, for example, Bittman *et al*., 2003; Siminski, 2006). For example, the R^2 in Bittman *et al*.'s (2003) housework equation was 0.12 in the case of husbands and 0.16 in the case of wives.

[6] Gronau (1977, p.1110) noted 'Recent time-budget findings have established that work at home and leisure are not affected in the same way by changes in socioeconomic variables, and this paper shows that the composition of the aggregate affects many facts of household behavior, such as labor supply, specialization in the household, and demand for children'. For this reason, and because it is of interest to understand why the amount of leisure differs between males and females, and varies across the family types considered in table 1, results are presented for the leisure category.

The inclusion of the partner's time allocation in the models has a modest effect on the estimated coefficients of the remaining variables. Detailed analyses of the influences of these standard variables on time allocations for couple families with children and for couple families without children can be found in Birch *et al*. (2009), along with comparisons with other studies. Hence, the discussion here will be limited to the distinguishing feature of the current study, namely the role of the partner's time allocation in the individual's time use equation.[7] According to the table 2 results, the partner's time allocation variable is statistically significant in each of the equations estimated for childless couple families. Moreover, the augmentation of the estimating equation for this family type with the information on the partner's time allocation is associated with an increase in the adjusted R^2 of between one percentage point (home duties for females) and 12 percentage points (leisure time of both males and females). In sharp contrast, the partner's time allocation variables are not statistically significant at the five per cent level in the equations for employment-related activities and home duties for couple families with children (table 3). Related to this, the adjusted R^2 is virtually unaffected by the inclusion of information on the partner's time allocation in the models for these two time use activities. The partner's time allocation is, however, statistically significant in the equation estimated for leisure activities for couple families with children, and its inclusion in the model increases the adjusted R^2 by between two and three percentage points.[8]

There are two main findings in tables 2 and 3 in relation to employment-related activities and home duties. First, in childless couple families (table 2), the time an individual allocates to a particular activity is significantly and positively related to the time their spouse allocates to the same activity. The estimated partial effects are close to 0.2 for employment-related activities, and around 0.13 for home duties.[9]

Thus, an increase of one hour in the time the husband allocates to employment-related activities (home duties) is associated with an additional 11 minutes of work time by his wife (and an extra eight minutes of home duty time).[10] This reinforcing action moderates the specialisation in time use that would otherwise occur in couple families (see Le and Miller, 2010). Note that in these multivariate examinations, there is no evidence that female's time allocations are more responsive than those of males to the time allocations of their partners to the same activity.

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[7] Comments on several variables in the equations estimated for the samples disaggregated by the age of the youngest child are, however, provided in the next sub-section, as these do not seem to have been covered in the recent literature.

[8] These increases in the adjusted R^2 are far less than the changes of 16 to 31 percentage points when the own market work time is included in the equation for home duties in Jenkins and O'Leary's (1995) illustration.

[9] Sharp *et al*. (2004) use a double-log specification in analyses for the US. The coefficients on the husband's housework variable in the equation for the wife's housework was 0.869 where the wife did not participate in the labour market, and 0.182 when the wife did participate in the labour market. These elasticities are higher than elasticities calculated from the table 2 results, of around 0.1. There are no obvious reasons for this difference, other than cross-national effects (on this matter, see Bittman *et al*., 2003).

[10] 11 and 8 minutes are computed, respectively, as the estimated coefficients of 0.182 and 0.137 multiplied by 60.

Table 2 - OLS Estimates of Time Allocations, Partners in Childless Couple Families

	Females			*Males*		
Variable	*Employment-related*	*Home Duties*	*Leisure*	*Employment-related*	*Home Duties*	*Leisure*
Constant	120.575	144.046	183.490**	342.075**	90.832	183.327**
	(0.71)	(1.55)	(2.10)	(2.23)	(1.13)	(2.05)
Age	-1.059	0.598	2.482	12.203*	-3.830	-5.787
	(0.15)	(0.15)	(0.62)	(1.70)	(1.07)	(1.36)
Age squared	-0.053	0.040	-0.015	-0.202**	0.060	0.083*
	(0.66)	(0.85)	(0.32)	(2.45)	(1.43)	(1.67)
English Skills (speaks only English)						
Speaks English very well	125.763	-12.528	-101.249***	-184.561***	50.400	-12.488
	(1.52)	(0.31)	(3.02)	(2.65)	(1.36)	(0.35)
Poor English skills	-26.129	12.373	18.391	-87.022	59.772*	-12.465
	(0.42)	(0.29)	(0.75)	(1.07)	(1.77)	(0.29)
Health (good)						
Excellent	1.608	33.617*	-27.996	-2.022	21.791	18.437
	(0.05)	(1.74)	(1.44)	(0.06)	(1.15)	(0.87)
Very good	5.131	10.048	-12.353	31.546	-6.700	-16.808
	(0.20)	(0.69)	(0.81)	(1.25)	(0.49)	(1.20)
Fair/poor	-105.316***	58.476***	30.432	-192.729***	48.024***	96.565***
	(3.54)	(2.82)	(1.42)	(5.76)	(2.89)	(4.34)
Years of education	12.397***	-3.862	-5.970**	1.852	0.343	0.082
	(2.92)	(1.49)	(2.38)	(0.40)	(0.14)	(0.03)
Area of Residence (middle quintile of areas)						
Lowest quintile of areas	17.503	2.561	-9.325	-41.598	2.178	40.305**
	(0.52)	(0.13)	(0.42)	(1.37)	(0.14)	(2.02)
Second lowest quintile	38.717	-4.248	-3.149	-123.528***	26.219	66.223***
of areas	(1.23)	(0.22)	(0.16)	(3.60)	(1.53)	(3.04)
Top 2 quintiles of areas	61.917**	-25.449	-13.376	-81.830***	23.029	54.465***
	(2.26)	(1.55)	(0.77)	(2.91)	(1.52)	(3.21)
Home owner	60.768**	-15.003	1.288	14.039	9.436	-20.470
	(2.08)	(0.90)	(0.08)	(0.58)	(0.78)	(1.25)
Partner's time in same	0.182***	0.137**	0.328***	0.170***	0.124***	0.387***
activity	(4.43)	(2.57)	(6.93)	(4.04)	(2.66)	(7.63)
R^2	0.214	0.160	0.199	0.279	0.094	0.251
Sample size	528	528	528	528	528	528
Mean of dependent Variable	261.80	222.35	254.45	412.25	121.52	249.68

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: Heteroscedasticity-consistent 't' statistics in parentheses; *, ** and *** denote statistical significance at the 10, five and one per cent levels, respectively. The dependent variable is measured in minutes per day.

Table 3 - OLS Estimates of Time Allocations, Partners in Couple Families with Children

	Females			*Males*		
Variable	*Employment-related*	*Home Duties*	*Leisure*	*Employment-related*	*Home Duties*	*Leisure*
Constant	-385.849***	448.457***	276.239***	614.835***	-52.339	187.796**
	(2.63)	(4.67)	(3.55)	(3.90)	(0.62)	(2.18)
Age	26.589***	-6.955	-2.542	2.937	3.541	-3.440
	(3.72)	(1.51)	(0.66)	(0.40)	(0.89)	(0.83)
Age squared	-0.351***	0.110*	0.042	-0.126	-0.002	0.064
	(4.04)	(1.94)	(0.88)	(1.49)	(0.05)	(1.32)
English Skills (speaks only English)						
Speaks English very well	76.038*	-47.518*	-16.462	-15.664	11.659	-29.978
	(1.86)	(1.66)	(0.95)	(0.39)	(0.60)	(1.15)
Poor English skills	-72.263***	27.845	15.800	-109.344***	34.016**	23.157
	(2.88)	(1.58)	(1.12)	(3.30)	(1.97)	(1.20)
Health (good)						
Excellent	51.847**	-33.333**	-7.011	-14.919	-16.042	-0.405
	(2.45)	(2.51)	(0.63)	(0.70)	(1.61)	(0.03)
Very good	32.166*	-2.065	-14.539	17.765	-8.172	-12.819
	(1.83)	(0.18)	(1.61)	(1.07)	(0.90)	(1.42)
Fair/poor	-10.481	17.973	-0.704	-122.195***	8.302	66.758***
	(0.36)	(0.81)	(0.04)	(3.23)	(0.43)	(3.01)
Years of education	15.325***	-9.693***	-2.869**	4.716	-1.915	1.337
	(5.72)	(5.64)	(2.12)	(1.45)	(1.12)	(0.76)
Area of Residence (middle quintile of areas)						
Lowest quintile of areas	-2.824	-13.233	6.882	-68.991**	32.730**	-3.596
	(0.12)	(0.82)	(0.58)	(2.55)	(2.26)	(0.26)
Second lowest quintile	-20.994	-14.996	22.301*	-45.325*	22.054	-12.591
of areas	(0.96)	(1.01)	(1.89)	(1.75)	(1.57)	(0.97)
Top 2 quintiles of areas	38.475**	-22.095*	6.842	5.221	-7.838	-14.478
	(1.98)	(1.76)	(0.77)	(0.28)	(0.84)	(1.43)
Home owner	-16.251	27.694**	-13.304	10.040	17.851*	-7.707
	(0.73)	(2.14)	(1.10)	(0.46)	(1.70)	(0.63)
Age of Youngest Child (non-dependent child only)						
0-4	-241.406***	73.391***	-44.400**	-112.659***	41.978**	-15.759
	(6.40)	(2.85)	(2.22)	(2.93)	(2.13)	(0.72)
5-12	-104.541***	51.101**	-46.155**	-27.942	-2.552	0.716
	(3.05)	(2.19)	(2.44)	(0.81)	(0.15)	(0.04)
13+	20.292	26.088	-29.546*	-28.538	37.550**	11.173
	(0.68)	(1.34)	(1.90)	(0.92)	(2.19)	(0.61)
Child care available	48.385***	-23.092*	13.308	20.496	6.330	-4.615
	(2.74)	(1.95)	(1.42)	(1.14)	(0.73)	(0.48)
Partner's time in same	-0.046	-0.029	0.152***	-0.054	-0.046*	0.177***
activity	(1.51)	(0.74)	(4.99)	(1.63)	(1.65)	(4.37)
R^2	0.158	0.057	0.076	0.101	0.061	0.107
Sample size	1012	1012	1012	1012	1012	1012
Mean of dependent Variable	199.01	263.83	196.39	481.62	102.08	196.02

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: Heteroscedasticity-consistent 't' statistics in parentheses; *, ** and *** denote statistical significance at the 10, five and one per cent levels, respectively. The dependent variable is measured in minutes per day.

Second, in couple families with children (table 3), the time the partner allocates to either employment-related activities or home duties is not statistically significant when considered as a determinant of the individual's time allocation to the same activity. As a result of this, specialisation in time use is more intense in couple families with children than it is in couple families without children.

The time allocated to leisure by the individual is significantly and positively related to the time their spouse allocates to this set of activities, both for childless couple families (table 2) and for couple families with children (table 3). Thus, among childless couple families, an extra hour of leisure activity on the part of an individual's spouse is associated with an extra 20 minutes leisure time for the individual if female, and an extra 23 minutes leisure time for the individual if male. The respective estimated effects are weaker among couple families with children, being nine and 11 minutes, respectively. This positive association between the time allocations of partners to a particular activity among childless couples is consistent with the findings in relation to employment-related activities and home duties. However, the positive links between the leisure times of partners in couple families with children is in sharp contrast to the apparent independence of the times allocated to employment-related activities and home duties of partners in couple families with children. These differences according to family type, and within a particular family type, according to time use, strongly suggest that the results are being driven by differences in family decision making rather than reflecting some insipient methodological issue, where greater consistency across family types and time uses might be expected.[11]

The findings in tables 2 and 3 are summarised in table 4.

Table 4 - Summary of Findings from Aggregate-Level Analyses

	Family Type	
Focus	*Childless Couple*	*Couple with Children*
Links between employment-related activities of partners	Positive	Nil
Links between home duty times of partners	Positive	Nil
Links between leisure times of partners	Positive	Positive

Table 4 makes it clear that children impact the coordination of the time allocation decisions of partners in couple families.

[11] For example, the inclusion of the time an individual allocates to employment-related activities in the estimating equation for their home duty time could simply reflect the adding-up constraint of the time budget (see Jenkins and O'Leary, 1995, p.274). This is unlikely in the present specification.

Analyses by the Age of the Youngest Child

Table 5 contains selected findings from the detailed analysis of the links between the time allocations of partners in couple families with children according to the age of the youngest child.[12] Presented in this table are the estimates for the partner's time allocation variable, for the variable for whether child care is available, and also, in the case of older children, a variable for whether the child has dependent or independent status. These additional estimates are provided due to the importance often attached to these characteristics in studies of time use.

Table 5 - Selected OLS Estimates of Time Allocations, Partners in Couple Families with Children by the Age of the Youngest Child

	Females			*Males*		
Variable	*Employment-related*	*Home Duties*	*Leisure*	*Employment-related*	*Home Duties*	*Leisure*
1. Youngest child aged 0-4 years						
Child care available	6.892	-13.808	33.998***	-0.823	15.916	6.403
	(0.30)	(0.82)	(3.15)	(0.03)	(1.32)	(0.49)
Partner's time in same activity	-0.077*	0.046	0.199***	-0.143***	0.023	0.216***
	(1.78)	(0.67)	(4.02)	(2.59)	(0.41)	(3.33)
2. Youngest child aged 5-12 years						
Child care available	94.676***	-38.352**	-15.631	45.809	4.055	-24.616
	(3.24)	(2.21)	(1.06)	(1.63)	(0.31)	(1.60)
Partner's time in same activity	-0.104*	-0.232***	0.159***	-0.104*	-0.139***	0.124*
	(1.73)	(2.93)	(2.70)	(1.93)	(3.41)	(1.79)
3. Youngest child aged 0-12 years						
0-4	-131.898***	19.928	-6.585	-105.600***	45.119***	-4.198
	(6.03)	(1.53)	(0.61)	(4.62)	(3.71)	(0.36)
Child care available	52.655***	-23.277*	11.439	20.461	7.079	-3.546
	(2.97)	(1.95)	(1.22)	(1.13)	(0.80)	(0.36)
Partner's time in same activity	-0.090**	-0.060	0.187***	-0.115***	-0.062*	0.188***
	(2.46)	(1.10)	(4.95)	(3.00)	(1.81)	(3.99)
4. Youngest child aged 13 or more years						
Child has dependent status	26.056	23.002	-19.360	-24.764	40.197**	0.580
	(0.85)	(1.10)	(1.26)	(0.80)	(2.24)	(0.03)
Partner's time in same activity	0.044	0.027	0.129***	0.065	-0.012	0.171**
	(0.88)	(0.49)	(2.81)	(1.12)	(0.25)	(2.47)

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: Heteroscedasticity-consistent 't' statistics in parentheses; *, ** and *** denote statistical significance at the 10, five and one per cent levels, respectively. The dependent variable is measured in minutes per day.

In couple families where the youngest child is aged zero to four years (see the first panel of results in table 5), the partner's time allocation to employment-related activities is a significant determinant of the individual's time allocated to this time use (albeit at the 10 per cent level for females). Importantly, the estimated effect is negative, which contrasts with the significant positive effects reported in the analysis for childless couple families. There are no apparent links between the ways that the

[12] The full set of results is available from the authors upon request.

partners in this family type allocate time to home duties. This could be described as an 'all hands on deck' phenomenon, although it is more often the women's hands than those of the men. However, the strong, positive association between the time allocated by one partner to leisure activities and the time allocated by the other partner that was established for childless couple families is also present in these data. It is also noteworthy that, according to these estimates, the availability of child care has a minimal impact on the time allocations of couple families with quite young children. Only one time allocation outcome, the leisure time of females, is affected by this amenity. Thus, the availability of child care per se does not seem to affect the amount of market work that mothers (or fathers) do. Factors such as the availability of affordable child care may be more important in this regard.

Moving onto the second panel of table 5, for couple families with children aged five to 12 years, it is seen that the partner's time allocation is a statistically significant determinant of the time allocation of the individual at the eight per cent level of significance or better. There is a negative association between the times partners allocate to employment-related activities, as well as a negative association between the time set aside for home duties of the partners in this family type. As with the other family types considered, there is a positive association between the leisure times of spouses. The partial effects, of 0.159 for females and 0.124 for males, are smaller than those reported for couple families with children aged zero to four years (of 0.199 for females and 0.216 for males).

The availability of child care appears to be a more important influence on the times allocated to various activities where the youngest child is aged five to 12 years than where the youngest child is aged zero to four years. Where child care is available, females with children aged five to 12 years allocate more time to employment-related activities and less time to home duties. These effects are in the expected direction.

Finally, turning to the results for couple families where the youngest child is aged 13 or more years, it is seen that the partner's time allocation is not a statistically significant determinant of the time allocated to either employment-related activities or home duties, for either females or males. In other words, this part of the Lifecourse Stage appears to be an intermediate stage, in terms of the links between the partners' time allocation decisions, between the findings for couple families with young children (generally negative associations) and childless couple families (positive associations). The times allocated to leisure by partners in couple families with only older children are, however, positively associated with each other.

It is useful to illustrate these findings using empirical reaction curves. These curves plot the husband's (wife's) time allocation to a particular activity as a function of the time their wife (husband) allocates to the same activity. They are drawn for the average person in each sample, and so intersect at the mean times allocated to each activity. Figure 1 plots these for employment-related activities.

Figure 1 - Empirical Reaction Curves, Employment-related Activities

Fig. 1.A Youngest Child 0-4 years

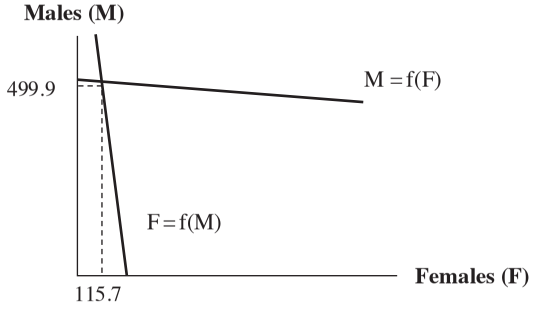


Fig. 1.B Youngest Child 5-12 years

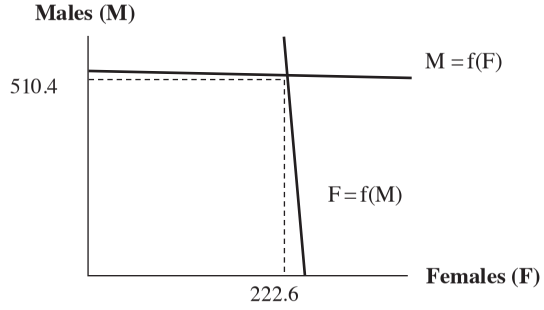


Fig. 1.C Youngest Child 13+ years

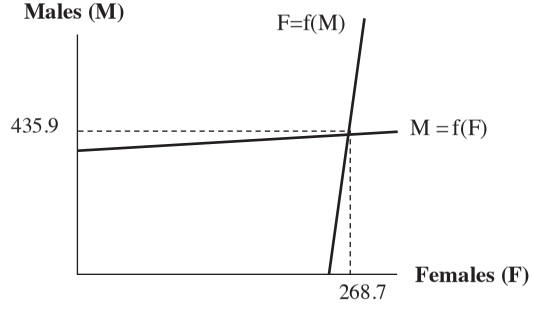
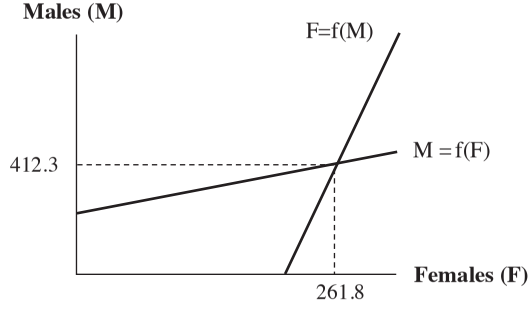


Fig. 1.D Childless Couple



Where young children are present (figures 1.A and 1.B), the decisions on time use by partners in couple families have a substitute relationship. This accentuates any underlying tendency to specialise in particular time use activities (which would be captured by shifts in the intercepts of the relationships depicted here). In couple families with only older children, the decisions on the time use by partners have a complementary relationship (figure 1.C). However, while there is a tendency for the partners to increase their allocation of time to a particular activity when their spouse allocates more time to that activity, this relationship is not statistically significant. Finally, in childless couple families, there is a positive relationship between the times partners allocate to specific activities, and this is statistically significant (figure 1.D). The pattern across family types described above for employment-related activities is also observed for home duties, though it is not as regular. It is not, however, observed for leisure activities, where the time allocations of partners move together in each family type.

In summary, the relationships between the time allocations of partners in the various family types, distinguished by the presence of children and the age of the youngest child, have a clear pattern that implies that children impact the complementarity/substitutability relationship between the partners' time allocations to employment-related activities and home duties.

Sensitivity Analyses

There are several statistical issues that need to be explored in relation to these analyses. The first of these concerns the presence of zero values in the data. The importance of this varies by time use, and differs between males and females. The issue is of little importance for leisure times. For example, only 17 of the 528 males in childless couple families report zero leisure time, and for females in this family type only 11 of 528 report zero leisure time. It is of greater importance for employment-related activities. For example, 144 of the males and 228 of the females in the 528 childless couple families report zero time allocated to employment-related activities.[13] Opinions differ, however, on whether zero values in time use data should necessarily be viewed as censored (see, for example, the discussion and references in Siminski (2006)). Given this, an agnostic approach might be taken, and the equations simply estimated using a Tobit model to assess whether this impacts the findings. Selected results from Tobit regressions on the time use data are presented in table 6.

Comparison of the findings in table 6 with those in table 2 for childless couple families, and in table 5 for couple families with children, shows that statistical accommodation of the possible censoring of the data has little impact on the material findings from the analysis.

A second possible concern in relation to the analyses presented above is endogeneity. It is possible that the partner's time allocation variable is endogenous in the individual's time use equation, and hence the estimates presented will be inconsistent. To explore this issue, the partner's time allocation variable was replaced by a prediction from a time use equation. Three alternative models were used to obtain these predictions. First, the pair of equations for partners in couple families for a particular time use was

[13] The prevalence of zero values differs between females (16 out of 528 childless couple families) and males (81 out of 528 childless couple families) in the case of home duties.

viewed as a set of simultaneous equations. In this instance, the identifying instruments are given by the specification of the models presented to date. Specifically, the personal characteristics of the partner are used as instruments for the partner's time allocation variable in the estimating equation. Note that the variables for home owner, area of residence, and for the age structure of children are common to males and females in each family, and hence are not available as instruments for the endogenous right-hand-side variable in each equation (see also Duguet and Sumonnet (2007)).

Table 6 - Selected Tobit Estimates of Time Allocations, Partners in Childless Couple Families with Children by the Age of the Youngest Child

	Females			*Males*		
Variable	*Employment-related*	*Home Duties*	*Leisure*	*Employment-related*	*Home Duties*	*Leisure*
1. Childless Couple Family						
Partner's time in same	0.391***	0.139***	0.335***	0.226***	0.117**	0.395***
activity	(5.27)	(2.84)	(8.96)	(4.13)	(2.57)	(9.12)
2. Youngest child aged 0-4 years						
Child care available	34.370	-12.864	34.835***	-5.659	25.386*	7.297
	(0.56)	(0.83)	(3.04)	(0.20)	(1.66)	(0.55)
Partner's time in same	-0.125	0.049	0.201***	-0.150**	0.029	0.229***
activity	(0.99)	(0.80)	(4.22)	(2.29)	(0.54)	(3.82)
3. Youngest child aged 5-12 years						
Child care available	194.032***	-39.372**	-16.803	51.646	3.896	-25.875*
	(3.38)	(2.23)	(1.14)	(1.55)	(0.25)	(1.65)
Partner's time in same	-0.170	-0.252***	0.163***	-0.116**	-0.150***	0.122**
activity	(1.49)	(3.35)	(2.90)	(1.97)	(3.18)	(2.08)
4. Youngest child aged 0-12 years						
0-4 years	-274.973***	21.008	-6.525	-118.440***	54.566***	-5.019
	(5.65)	(1.52)	(0.61)	(4.71)	(4.30)	(0.43)
Child care available	130.683***	-22.847*	11.586	21.206	12.169	-3.058
	(3.10)	(1.94)	(1.27)	(1.02)	(1.14)	(0.31)
Partner's time in same	-0.158*	-0.065	0.190***	-0.124***	-0.064*	0.193***
activity	(1.86)	(1.35)	(5.21)	(2.86)	(1.78)	(4.68)
5. Youngest child aged 13 or more years						
Child has dependent status	66.624	25.482	-18.579	-32.112	44.285**	-1.170
	(1.33)	(1.25)	(1.15)	(0.79)	(2.20)	(0.06)
Partner's time in same	0.120	0.024	0.135***	0.101	-0.009	0.172***
activity	(1.53)	(0.40)	(3.09)	(1.46)	(0.17)	(2.75)

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: 't' statistics in parentheses; *, ** and *** denote statistical significance at the 10, five and one per cent levels, respectively. The dependent variable is measured in minutes per day.

Second, allowance is made for the possibility that the partner's health status has a direct effect on the individual's time allocations, and the partner's health status variables are removed from the set of identifying instruments. Third, the set of instruments is expanded along the lines of Connelly and Kimmel (2009). Thus, the square of the partner's education attainment, along with interaction terms between the partner's age and educational attainment, are added to the set of instruments.

However, reflecting the low degree of explanation of most variables in the time use equations presented to date,[14] the F-test on each of the sets of identifying instruments in the first-step regression could not reject the null that the identifying instruments did not impact the leisure time of either spouse. This F-test was passed in the case of both home duties and employment-related activities. The set of instruments that performed the best across the various time use activities was the expanded set that included the square of the partner's educational attainment and interaction terms between the partner's age and educational attainment. Selected results using these instruments are presented in the second panel of table 7. The relevant companion set of OLS results are also presented in the first panel of this table.[15] The estimates in this panel consider reach time allocation separately.

The final panel of table 7 presents results from the estimation of all six time use equations jointly. There are negative, but inconsequential, correlations between the residuals of the time use equations of the partners for employment-related activities and home duties, and a positive correlation (r = 0.152) between the residuals in the leisure time equations for the partners. The correlations between the residuals from the time use equations for a given partner are negative and sizeable (r in excess of -0.4), except for the home duties and leisure equations, where the correlation is positive, but small (r = 0.15 for males and r = 0.03 for females). Accommodating the linkages across the equations through estimating the equations as a seemingly unrelated system results in minor changes to the estimates. Similar conclusions are drawn from estimation of the equations using a system of Tobit models.[16]

There are five comments that can be made about the table 7 results for employment-related activities and home duties. First, the findings in relation to the exogenous variables are not affected by the choice of method of estimation. Second, the estimated negative effects associated with the potentially endogenous right-hand-side variable are usually larger, in absolute value, under the instrumental variable approach than under OLS, although this pattern is far from being a uniform one. Third, sometimes the estimated effects appear to be more precisely determined under the instrumental variable approach to estimation than under OLS, although again this change is not consistent across the various time use equations. This situation appears to be linked to the quality of the instruments. Fourth, as a summary comment, the use of instruments produced findings that are not inconsistent with the earlier findings presented from the study of the data using OLS. Finally, the seemingly unrelated regression framework is associated with broadly similar findings to those obtained when each equation is estimated separately.

[14] Recall from table 3 that when the variables most likely to affect an individual's time allocations, namely his or her own characteristics, are entered into the estimating equation the explanatory power of the model is quite low, with R^2 as low as 0.06.
[15] Results for the determinants of leisure time with the predicted partner's time allocation variable are presented for completeness.
[16] This estimation was undertaken using the QLIM procedure in SAS, Version 9.2. However, the large number of iterations required is a good indication that the maximum is not well defined in this set of equations with few significant regressors. Hence only the findings from the linear regression model are presented.

Table 7 - Selected OLS, Instrumented and SUR Estimates of Time Allocations, Partners in Couple Families with Children

	Females			*Males*		
Variable	*Employment-related*	*Home Duties*	*Leisure*	*Employment-related*	*Home Duties*	*Leisure*
1. Ordinary Least Squares (OLS)						
Age of Youngest Child (non-dependent child only)						
0-4	-241.406***	73.391***	-44.400**	-112.659***	41.978**	-15.759
	(6.40)	(2.85)	(2.22)	(2.93)	(2.13)	(0.72)
5-12	-104.541***	51.101**	-46.155**	-27.942	-2.552	0.716
	(3.05)	(2.19)	(2.44)	(0.81)	(0.15)	(0.04)
13+	20.292	26.088	-29.546*	-28.538	37.550**	11.173
	(0.68)	(1.34)	(1.90)	(0.92)	(2.19)	(0.61)
Child care available	48.385***	-23.092*	13.308	20.496	6.330	-4.615
	(2.74)	(1.95)	(1.42)	(1.14)	(0.73)	(0.48)
Partner's time in same	-0.046	-0.029	0.152***	-0.054	-0.046*	0.177***
activity	(1.51)	(0.74)	(4.99)	(1.63)	(1.65)	(4.37)
2. Instrumented time use variables						
Age of Youngest Child (non-dependent child only)						
0-4	-241.040***	71.243***	-39.228**	-113.773***	43.800**	-7.839
	(6.42)	(2.95)	(2.01)	(2.86)	(2.30)	(0.33)
5-12	-105.521***	46.478**	-43.667**	-22.895	1.071	4.612
	(3.16)	(2.11)	(2.55)	(0.71)	(0.06)	(0.21)
13+	20.436	28.324	-30.768**	-14.705	35.589**	12.943
	(0.73)	(1.57)	(2.16)	(0.51)	(2.41)	(0.74)
Child care available	47.522**	-22.804*	13.611	17.861	5.297	-5.372
	(2.48)	(1.88)	(1.41)	(0.90)	(0.50)	(0.48)
Partner's time in same	-0.007	-0.165	0.278**	-0.138	-0.293***	0.267
activity	(0.07)	(1.10)	(2.44)	(1.30)	(3.15)	(1.13)
3. SUR Estimation with instrumented time use variables						
Age of Youngest Child (non-dependent child only)						
0-4	-238.289***	70.455***	-42.254**	-91.743**	41.577**	-10.918
	(6.36)	(2.93)	(2.18)	(2.37)	(2.18)	(0.48)
5-12	-104.490***	48.210**	-44.186***	-15.146	-0.218	2.530
	(3.13)	(2.21)	(2.59)	(0.47)	(0.01)	(0.12)
13+	21.086	27.759	-30.009**	-20.230	35.788**	11.583
	(0.75)	(1.54)	(2.11)	(0.71)	(2.43)	(0.68)
Child care available	47.691**	-23.260*	13.076	13.446	6.959	-5.338
	(2.50)	(1.92)	(1.35)	(0.68)	(0.66)	(0.48)
Partner's time in same	-0.003	-0.111	0.223**	-0.021	-0.214**	0.253
activity	(0.04)	(0.89)	(2.09)	(0.23)	(2.55)	(1.23)

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: Heteroscedasticity-consistent 't' statistics in parentheses; *, ** and *** denote statistical significance at the 10, five and one per cent levels, respectively. The dependent variable is measured in minutes per day.

5. Conclusion

The analyses reported in this paper show that the times allocated to home duties, employment-related activities and leisure by partners in couple families without children are complementary. Additional time allocated to one activity by one member of this family type is associated with the person's partner also allocating more time to the same activity. As argued by Le and Miller (2010), this tendency to undertake like activities moderates any underlying tendency to specialise in specific time uses in childless couple families.

In couple families with children, and particularly those with children aged less than 12 years, the partners' time allocations appear to have a substitute relationship in the case of home duties and employment-related activities: more time allocated to one activity by one member of this family type is associated with less time being allocated to the same activity by the person's partner. The leisure times of partners in couple families with children are, however, complementary, although this finding is sensitive to the specific statistical approach applied.

In couple families with only older children, however, the time allocations of partners appear to be independent in the case of employment-related activities and home duties. Thus, in terms of the way time allocation decisions are made, this family type appears to be an intermediate stage between the couple families with young children and the childless couple families.

Thus, children appear to impact decision making over particular time uses by the partners in couple families by reducing the opportunity for partners to engage in like activities. This effect is more intense the younger the age of the children.

In related research, Le and Miller (2012) show that inequality in the division of time in the family unit affects the satisfaction with their current allocation of time of both husbands and wives in couple families without children. These are the families that are characterised by complementarity or similarity in time allocations, and departures from the (greater) equality of partners' time allocations that results from this complementarity affect the level of satisfaction with time allocations. In couple families with children, however, children appear to mitigate the chances to engage in like activities.[17] In other words, children, and it is shown here that it is young children in particular, foster specialisation, and the inequality in partners' time allocations that results does not affect the degree of satisfaction the partners have with their current time allocations. That is, the highly specialised allocations of time that are typical of couple families with children appear to have provided the norm that is used in assessment of satisfaction levels, among both husbands and wives in this family type. Expectations and benchmarks have been shown in other research (*e.g.*, Baxter *et al.*, 1996; Baxter and Western, 1998) to have an important influence on a person's satisfaction with the household division of labour. If this is the case, then the implication is that the inter-household arrangements in couple families with children are voluntary, given current norms. Addressing any adverse implications of the inequality in time allocations within the household needs to be sensitive to this

[17] In contrast, Craig and Sawrikar's (2009) analyses show that parents report more time pressure than non-parents, where time pressure is assessed from responses to a question on how pushed or pressed for time the people were. They also report that mothers had more time pressure than fathers.

perspective. For example, Smith (2007) shows how the specialisation in couple families has adverse implications for women's retirement incomes under accumulation-based superannuation schemes. The research in this study, along with the related research in Le and Miller (2012), would support policy reforms that facilitate contributions by the partner to the wife's superannuation fund (Smith, 2007, p.109). Accepting that reforms in this area may have limited impact owing to family financial constraints when young children are present, research that seeks to understand the apparent slow evolution of norms on the household division of time should be viewed as a priority.

Appendix A
Description of Variables

Variable	*Description*
Time Allocation	This refers to the respondent's allocation of primary time (that is, their main activity). It is recorded in minutes per diary day.
Age	A continuous variable, created using the mid-points of the 5-year age intervals used in the data source. This is entered into the model in quadratic form.
English-speaking skills	The individual's self-reported proficiency in spoken English is categorised into three mutually exclusive groups: English only; speaks a language other than English at home and speaks English very well; speaks a language other than English at home and speaks English well, not well or not at all. Monolingual English speakers are the benchmark group.
Health Status	The individual's self-assessed health status is categorised into four mutually exclusive categories: excellent; very good; good and fair/ poor. The good health group is used as the benchmark group.
Educational Attainment	Years of full-time education equivalents have been assigned to each of the levels of education in the survey to form a continuous years of education variable.
Socio-economic status of area of residence.	This is described using quintiles on the Index of Relative Socio-economic Disadvantage that is constructed by the Australian Bureau of Statistics, using Census variables that are related to disadvantage, such as low income, low educational attainment, unemployment and dwellings without motor vehicles (see ABS, 2006). Three dichotomous variables are formed to distinguish individuals living in the bottom quintile, the second-bottom quintile and the top two quintiles of areas from the reference group of individuals living in the middle quintile of areas.
Home ownership status	A dichotomous variable is used to distinguish individuals who own their home from those who rent or have other tenure types. Individuals who do not own their home are the reference group.
Age of the youngest child	Dichotomous variables are used to capture the effects of the youngest dependent child being either 0-4 years, 5-12 years or 13 or more years of age. Families where only non-dependent children are present are the reference group.
Availability of child care	This is a dichotomous variable set equal to one where child care can be arranged at short notice.

Table A1 – Descriptive Statistics of Explanatory and Dependent Variables, Partners in Childless Couple Families and in Couple Families with Children

	Couple Families without Children		*Couple Families with Children*	
Variable	*Females*	*Males*	*Females*	*Males*
Employment-related activities	261.80	412.25	199.01	481.62
	(373.28)	(283.96)	(246.71)	(247.54)
Home Duties	222.35	121.52	263.83	102.08
	(156.65)	(135.05)	(149.67)	(126.93)
Leisure	254.45	249.68	196.39	196.02
	(160.94)	(173.38)	(118.75)	(135.34)
Age	45.938	47.550	41.359	43.254
	(13.041)	(13.345)	(8.541)	(8.972)
Years of education	13.223	13.414	13.401	13.722
	(2.914)	(2.509)	(2.855)	(2.517)
English Speaking Skills (Benchmark: Monolingual English speakers)				
Speaks English very well	0.019	0.027	0.032	0.026
Poor English skills	0.036	0.033	0.067	0.065
Self-reported Health Status: (Benchmark: Good)				
Excellent	0.163	0.136	0.205	0.188
Very good	0.342	0.311	0.442	0.379
Fair/poor	0.135	0.187	0.058	0.076
Socioeconomic Status of Area of Residence (Benchmark: Middle quintile)				
Lowest quintile of areas	0.164		0.163	
Second lowest quintile of areas	0.205		0.170	
Top 2 quintiles of areas	0.407		0.443	
Home owner	0.791		0.857	
Partner's time in same activity				
Sample size	528	528	1012	1012

Source: Australian Bureau of Statistics' Time Use Survey, 2006.
Notes: Standard deviations are presented only for continuous variables. The dependent variables are measured in minutes per day.

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