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DO WE INVEST LESS TIME IN CHILDREN? TRENDS IN PARENTAL TIME IN SELECTED INDUSTRIALIZED COUNTRIES SINCE THE 1960S

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Abstract

This paper examines trends in parental time in selected industrialized countries since the 1960s using time-use survey data. Despite the time pressures to which today's families are confronted, parents appear to be devoting more time to children than they did some 40 years ago. Results also suggest a decrease in the differences between fathers and mothers in time devoted to children. Mothers continue to devote more time to childcare than fathers, but the gender gap has been reduced. These results are observed in several countries and therefore suggest a large global trend towards an increase in parental time investment with their children.

Introduction

The time devoted by parents to their children is a major form of investment: an investment that is strongly linked with children's well-being and development. Time spent by parents with children, including parent-child shared activities, has been shown to have a positive impact on children's development (Büchel and Duncan 1998; Furstenberg, Morgan, and Allison 1987; Cooksey and Fondell 1996). Yet, the time pressures to which today's families are confronted would suggest that parents are devoting less time to their children, as compared to some 30 or 40 years ago. The expressions "time crunch," "time poor," "time squeeze," and "time famine" have routinely been used in the popular and academic press to characterize today's families (Bunting 2000; Gershuny 2000; Daly 2000; Clarkberg 1999).[1]

Time-use data from the United States and other countries suggests however exactly the opposite. In the United States, between 1965 and 1998, time devoted by married fathers to childcare has increased from 0.4 hour to 1.0 hour per day, while time devoted by married mothers has increased from 1.7 to 1.8 hours (Bianchi 2000). Evidence obtained on the basis of children's time diaries, rather than parents' diaries, comes also to a similar conclusion. A comparison of 1981 and 1997 American data suggests that children are <u>not</u> spending less time with parents. In the case of two-parent families, today's children are in fact spending substantially more time with their parents than in 1981 (Sandberg and Hofferth 2001). Time-use data from the United Kingdom suggests similar trends. Between 1961 and 1999, time spent on childcare by mothers has increased from 0.7 hour per day to 1.7, while for fathers it has increased from 0.2 hour per day to 0.8 hour (Fisher, McCulloch, and Gershuny 1999).

Evidence from other countries is more limited, and in some cases, even suggests an opposite trend. Gershuny (2000) employs time-use data from more than twenty countries and suggests that time spent on childcare activities by men and women decreased between 1960 and 1984, but that it has increased since then. On the other hand, research by Klevmarken and Stafford (1999) suggests that time spent by parents with their children has decreased in Sweden between 1984 and 1993.

In this paper, we contribute to this literature by examining historical trends in parental time in selected industrialized countries. Extending the work of Bianchi (2000), we ask the question of how much more, or less, time are today's parents devoting to their children as compared to parents some 40 years ago. These trends are difficult to predict theoretically. While the increase in women's labor force participation since the 1960s suggests a reduction in the time available for children (and for other non-work activities), reductions in family size and the overall increase in education suggest an increase in time devoted to each child.

This paper represents our initial attempt at measuring trends in the time devoted by parents to childcare activities, thereafter referred to as parental time. To do so, we rely on time-use surveys collected in various countries between 1961 and 2000. These surveys collected data on parents' allocation of time to various activities, including childcare activities. They allow us to estimate parental time by gender, labor force status, and family type. They also allow detailed estimates by type of childcare activities.

The paper is divided into four sections. In Section 1 we review the literature on parental time. We discuss the evidence related to historical trends in parental time, and discuss the links between parental time and various determinants of parental time including parents' education and mother's labor force status. In Section 2, we introduce our theoretical framework, taking as a

starting point the quality-quantity argument in classical family economics theory. We present our data and methods in Section 3, and our results in Section 4. We conclude our paper by summarizing our results and suggesting future avenues of research.

Literature

The observed increase in time devoted to children by parents in the United States and the United Kingdom is somewhat surprising given the large and sustained increase in female labor force participation since the 1960s (United Nations 2000). Despite less availability, today's parents appear to have been able to preserve the time that they spend with their children by 'taxing' other activities, including sleep (Hill and Stafford 1985). This process of time re-allocation was observed by Bittman (1999) on the basis of Australian data. Bittman writes: "it is noteworthy that parents' increasing use of child care centers has been accompanied by increases in the time both mothers and fathers spend in face-to-face activities with their children" (p. 11).[2] Other findings corroborate this result. Research based on the 1992 Australian time-use survey reveals that while employed parents devote less time to childcare than non-employed parents, the difference in time devoted to childcare between the two groups is much less than the difference in time devoted to work. In 1992, employed parents devoted 2.1 hours per day on childcare as compared to 3.0 for non-employed parents (Miller and Mulvey 2000). If these results, observed on the basis of cross-sectional data, were also valid longitudinally, they would suggest that the increase in female labor force participation and in dual-earner families have not led to a major decline in parental time.

Estimates from a longer time-series suggest however a different conclusion. Analyses by Bryant and Zick (1996) for the United States suggest that time spent by parents on childcare has remained relatively stable between 1924 and 1981, but that it is instead the time spent per child that has significantly increased. For married mothers, time spent on childcare per child increased from 0.6 hour per day in 1924-31 to 1.0 hour in 1981, while for married fathers, it increased from 0.2 hour in 1975 (earliest year available) to 0.3 in 1981. Unfortunately, no such long time-series is available in other countries.

As to gender differences in parental time, mothers continue to devote more time to childcare than fathers. Results for the United States suggest however that the gender gap has been substantially reduced. While the ratio of married fathers' to married mothers' hours spent on childcare was 0.24 in 1965, it was 0.55 in 1998 (Bianchi 2000). Data from Sweden for the period 1984 to 1993 also suggests that men and women have become more alike in both market work and household work, including childcare activities (Hallberg and Klevmarken 2003). In Britain, estimates of parental time suggest that fathers' share of total parental time has increased from about 12 percent in 1961 to 30 percent in 1999 (Fisher, McCulloch, and Gershuny 1999).

With regard to differences in parental time by socio-economic level, numerous studies have confirmed that more educated parents tend to devote more time to childcare, and to provide a richer variety of caring activities to their children (Hill and Stafford 1974; 1985; Leibowitz 1974; Gronau 1977).[3] Similarly, studies have confirmed that mothers from higher socioeconomic groups were devoting significantly more time to their preschool children as compared to mothers from lower socioeconomic groups (Hill and Stafford 1974). Estimates for British fathers go however counter to those observed in the United States. In 1999, professional fathers in Britain were devoting the least time to childcare (about 30 minutes per day), while fathers in manual

occupations were devoting the most time to childcare (about 50 minutes per day) (Fisher, McCulloch, and Gershuny 1999).

Most of the above results come from studies carried out in Australia, Britain, and the United States where there is a long tradition of time-use research. Whether or not these results hold for other countries is unclear. As mentioned above, Gershuny (2000) examined historical trends in time allocation patterns in twenty industrialized countries since the 1960s, but no detailed analysis for childcare was provided. In this paper, we provide estimates of parental time since the early 1960s using time-use data from sixteen countries (Australia, Belgium, Bulgaria, Canada, Czechoslovakia, Finland, France, Germany, Hungary, Italy, Norway, Poland, Sweden, the United Kingdom, the United States, and the former Yugoslavia). And while this subset of countries prevents us from generalizing our results to all industrialized countries, the subset nonetheless includes countries belonging to various welfare state regimes as well as various economic, social and political cultures. The heterogeneous characteristics of our sample thus give us some confidence in stating that the results are not specific to one or few countries but that they capture a more general societal trend.

Building on earlier work, and especially the American results by Bianchi (2000), we ask three main questions: (1) What has been the trend in parental time in industrialized countries since the 1960s? And how has the increase in parental time (if any) been ‘financed’? (2) What type of childcare activities have most benefited from an increase (if any) in parental time? And (3) What has been the trend in the gender gap, that is, in the difference between the time that mothers and fathers devote to childcare? We, thus, go beyond the current literature by examining both the ‘quantitative investment’ into children (measured by the number of hours devoted to childcare) and the nature of this investment as captured by the type of childcare activities. The

paper, thus, aims at broadening our understanding of how parents devote time to their children, and how they manage to preserve time for children.

Theoretical Framework

The quality-quantity tradeoff in the demand for children is central to the economic theory of the family (Becker and Lewis 1973; Becker and Tomes 1976; Willis 1987).[4] Parents, it is argued, may decide to have fewer children, but to have children of higher "quality" by devoting more resources to them. In one version of this theory, parental resources are restricted to financial resources. Parents who aim at higher "quality" consequently spend more money on their children. They may, for instance, send their children to private school, may hire a private tutor, or may pay for extracurricular lessons. The resources devoted to children may however also be understood in terms of time. In the previous examples, parents were spending more money by paying "experts" to devote their time to children. Parents may also invest more of their own time to children in order to increase their children's "quality."[5] Of course, other factors may also influence children's development and achievement, including the families' income, access to resources (such as other relatives), and so on. In this paper, we confine our discussion to parental time itself and leave aside the issue of the impact of parental time investment on children, as well as the monetary resources devoted to children.[6]

From the onset, we should draw a distinction between changes in the overall parental time that are due to compositional or structural effects (i.e., changes in the structure of the population) and changes that are due to behavioral effects (i.e., changes in parenting style and in time investment into children). In terms of compositional effects, several economic and demographic changes may be expected to have affected parental time. There is first the decrease

in fertility. As discussed above, from a quantity-quality argument, the decrease in fertility observed from the 1960s may be expected to have been accompanied by an increase in parental time. This causal relationship between fertility and parental time is, however, not so simple because reduced family size did not take place in isolation. The decades since the 1960s were also characterized by a major increase in women's labor force participation: a trend that has likely reduced the time available by mothers for their children.[7] From a joint household perspective, it is possible that fathers may have reacted to this situation by increasing their own time with children.[8] However, this would have been a costly time reallocation for families considering that fathers normally earn higher wages than mothers.

Other structural factors may have also influenced trends in parental time. As mentioned earlier, more educated parents tend to devote more time to childcare. They may do so because they aim at children's of higher "quality" or because they are more aware of the positive impact of parent-child shared activities on children's development. As a result of the increase in the average educational level of the population, we may, therefore, expect an increase in parental time.

Age of parents at children's birth is another factor that may affect parental time. There is evidence that middle-age husbands devote more time to housework than do younger husbands (South and Spitze 1994). It is however unclear if the same phenomenon is observed for childcare. If this were the case, the rapid increase since the 1960s in the age at entry into parenthood would suggest an increase in parental time, especially for fathers (everything else being equal).

Finally, there is the increasing instability of families: a factor that may also have affected historical trends in parental time—at least at the aggregate level. For instance, recent studies suggest that stepfathers may not have the same level of commitment to their non-biological children than biological fathers (McLanahan and Sandefur 1994). Whether this difference in the level of commitment is translated into a lower number of hours devoted to children is unknown.[9] The lower level of commitment nevertheless suggests that the increase in the proportion of blended families may have resulted in an overall decrease in time spent by fathers on childcare (since a higher proportion of them are stepfathers than in the past).

The net effect of these compositional changes is difficult to assess. On the one hand, the decline in family size, the increase in parental education levels, and the increase in the age at entry into parenthood, can all be expected to have increased parental time in recent decades – at least in two-parent families. On the other hand, the increase in female labor force participation, the increase in family instability, and the rise in the proportion of blended families, may be expected to have decreased parental time.[10]

In addition to the above compositional effects, changes in parenting styles (i.e., behavioral effects) may also have affected the trends in parental time. The switch from quantity to quality in the classical economic fertility theory suggests such a behavioral effect. Unfortunately, we have very little information on individual preferences regarding time investment into children, versus other activities, and little information on the related changes over time. Similarly, we know little about changes in societal norms that may have affected time investment into children. For instance, it is possible that societal norms have called for increasing time reading to, or playing with, children, and for fathers to be more involved in their children's lives.[11] It is also possible that societal norms have motivated parents to devote more time to their

children as a way of protecting them from street dangers and other potentially dangerous environments (the practice of driving kids to and from school would be an example of such a protective behavior).

The net effect of these compositional and behavioral effects is difficult to predict.[12] As noted earlier, it is possible that parents may have compensated for the increase in female labor force participation by reducing time on other activities in order to preserve the time that they spend with their children. If this were the case, parental time may have been unaffected by the increase in female labor force participation. As pointed above, there is evidence that parental time in the United States has increased over time, but that it has decreased in Sweden. The results presented below are a first attempt at shedding light on the net impact of these different forces, and at distinguishing trends in different types of childcare activities.

Data and Methods

In this paper, we rely on time diaries to estimate parental time. We used surveys carried out in sixteen industrialized countries between 1961 and 2000 (in the second part of the paper we focus on Canada). The choice of these countries was mainly dictated by data availability in that the related surveys have all been harmonized into a common set of demographic and time-use variables as part of the Multinational Time Use Study. And while these countries represent only a subset of all industrialized countries, they include countries belonging to very different social, political, and welfare state regimes. One point that we should emphasize is that we do not have data for the whole 1961—2000 period for each country. Instead, what we have is a set of surveys that covers the last four decades and that allows us to capture general trends.

All the surveys used the same instrument to capture people's allocation of time, namely the 24-hour diary. Such an instrument has been shown to provide more accurate estimates of people's allocation of time, as compared to other survey techniques, such as recall questions about time spent on specific activities during a fixed period of time (Robinson and Godbey 1997).[13] Other differences across the surveys used in this paper may however affect their degree of comparability. This includes the different response rates (especially the lower response rate of some of the surveys), the coverage of the twelve months of the year, and the sampling frame. Details on these surveys appear in Appendix.

On the basis of these surveys, we provide estimates of time spent on five main categories of activities: (1) Paid work and education; (2) Housework; (3) Childcare; (4) Leisure; and (5) Personal activities (including sleeping and eating). In this context, childcare activities encompass activities such as reading to children, playing with children, putting children to bed, and providing general care to children, including medical care. The sum of all these activities is equal to 24 hours. An important point to stress here is that we restrict the analysis to primary activities only, that is, the main activity that is carried out at any time during the day. Simultaneous activities (i.e., secondary activities) were collected in some of the surveys analyzed in this paper, but not in all of them and are moreover not part of the current version of the multinational dataset. This limitation is important to keep in mind since estimates of parental time based on primary activities only are known to under-estimate the total time devoted by parents to children since a large fraction of childcare activities are carried out in parallel to other activities. Our argument is however that childcare activities reported as primary activities in time diaries possibly capture more intense parent-child interactions than childcare activities reported as secondary activities (e.g., supervising children while carrying out another activity).[14,15]

In the analysis, we provide estimates of parental time for two-parents families (married or cohabiting). Historical trends for one-parent families would be interesting to analyze but there are too few cases in our dataset to carry out this analysis. We also provide estimates by labor force status of the respondents. We restrict the analysis to parents with at least one child under the age of five. We selected the 'under five' category simply because it likely corresponds to a period of high childcare demand. We however did not restrict the analysis to parents with only children under the age of five to avoid the problem of small number of cases.

Empirically, we proceed in two steps. We first present results based on the multi-country dataset. The analysis is essentially descriptive and focuses on the mean number of hours per day devoted to childcare. These estimates are daily averages and are weighted to ensure an equal representation of every day of the week. In this first part of the analysis, we provide results for all countries in an attempt at capturing global trends in parental time. In the second part, we then focus on Canada, which long time-series allows us to understand better the nature of parental time activities and the way these activities are "financed". In addition to the descriptive results, we also present results from multivariate analysis in order to control for some of the historical changes in the characteristics of the population. And because of the nature of parental time data, that is, the fact that a non-negligible proportion of parents report spending zero minutes on childcare activities on any diary day (more so among fathers than mothers), we used a Tobit model. This is the type of regression model that has mainly been used in the recent time-use literature.[16]

Empirical Results

We first start our analysis by examining historical trends in parental time using our full multinational dataset. The aim here is to capture general trends that would supercede country-specific explanations. In the second part, we then turn our attention to the Canadian case which, because of its long time-series and detailed dataset, offers opportunities to examine in greater depth the actual nature of parental time.

Multinational trends in parental time

Estimates of parental time for married (or cohabiting) parents by gender and employment status appear in Figure 1 for the full dataset.[17] We report results for full-time employed fathers, full-time employed mothers, non-employed mothers, and all mothers (all employment statuses combined). Part-time employed parents as well as non-employed fathers had too few cases to provide reliable estimates. We also fitted a liner trend to the descriptive statistics in order to capture the overall historical trend. Contrary to the popular belief that today's parents devote less time to children, data suggests exactly the opposite trend – at least for married parents with children under the age of five. For married fathers employed full-time, time devoted to childcare increased from around 0.4 hours per day in 1960 to just over 1 hour in 2000 (based on the regression line). An increase in time devoted to childcare was also observed for women, with an increase of about 0.9 hour per day for mothers who are employed full-time, and 1.2 hours for those who are not-employed. These results are both remarkable and puzzling. According to the time availability theory, we would have expected today's parents to have less time to devote to their children than in the past. The fact that non-employed mothers are those having increased most the time that they devote to children suggest that factors other than time availability is at

work including possibly a desire to invest more in children. As we will discuss in the final section of this paper, there are however other reasons that may explain these findings.

Results for all mothers (all employment statuses combined) are also fascinating. Despite the increase in female labor force participation since the 1960s, and despite the fact that employed mothers devote less time to childcare than non-employed mothers, the overall trend is nonetheless positive.[18] In other words, the increase in female labor force participation has not led to an overall decrease in parental time. We should also note that these results provide mixed results regarding the gender gap. The results do reveal a stronger upward trend for mothers than for fathers. However, when we look at the ratio of fathers' to mothers' time, the data instead suggest a reduced gender gap. For full-time employed parents, the ratio increased from .33 in the 1960s to .48 in the 1990s. A similar trend (although stronger) was observed by Bianchi (2000) on the basis of American data.

Finally, we should note that, with the exception of full-time employed fathers, the results display considerable cross-national variations. We will not comment on these results as there are no obvious theoretical framework to explain these cross-national differences. This is something that we hope to investigate in future papers.

The Figure 1 results are based on analyses that use each survey as a unit of analysis. An alternative way of analyzing the multinational dataset is to examine historical trends for countries with multiple time-use surveys. Results appear in Figure 2 and confirm our earlier conclusion that time spent by parents on childcare activities has increased since the 1960s. The magnitude of the increase varies by country and the related slopes are slightly larger than those observed above on the basis of the full dataset. For a 40-year period, they suggest an increase in

parental time ranging from 1 hour per day (for full-time employed fathers) to 1.8 hours per day (for non-employed mothers).

Returning now to the full dataset, a key question is how has time been reallocated in order to "finance" the increase in parental time. Table 1 reports the mean patterns of time-use of parents by decade. Again, it should be remembered that the data for each of these decades pertain to different countries and that the trends are consequently not based on national time-series. For fathers with at least one child under the age of five, the data suggest that not only has childcare increased but so has time devoted to housework. This result is in fact in line with those reported by Gershuny and Robinson (1988) and by Gershuny (2000). The data also suggest that fathers' increase in housework and childcare has been financed from a reduction in paid work and a reduction of time devoted to personal activities (mainly sleep). Results for mothers suggest that the increase in time devoted to childcare has also been financed through a reduction in time devoted to paid work and personal activities. However, and in contrast to fathers, mothers have decreased rather than increased the time that they devote to housework. Again, this was a trend observed by other authors (e.g., Gershuny 2000) and which suggest a reduction in the gender allocation of time to domestic work.

The case of Canada

We now turn our attention to Canada in order to examine in more detail the nature of the increase in parental time. We cannot claim that the results for Canada can be generalized to all industrialized countries. However, and as in Table 1, the historical trends for Canada appear to be in line with those observed in other countries. Full-time employed married (or cohabiting) fathers whose youngest child is under five have increased their allocation to childcare activities from 0.6 hours per day in 1971 to 1.4 hours in 1998. The increase for full-time employed

mothers is of a similar magnitude, from 1.2 hours per day in 1971 to 2.1 hours in 1998. And in line with results reported earlier, non-employed mothers have also increased their allocation to childcare activities from 2.7 hours per day in 1971 to 3.5 in 1998.

As in other countries, the increase in the total time devoted to childcare activities can have resulted from an increase in the proportion of parents who devote time to childcare activities (as mentioned earlier not all parents devote time to childcare activity on the diary day) and/or an increase in the time devoted to childcare activities by the "doers" (i.e., parents who devote a non-zero amount of time to childcare). We provide below estimates for these two components of parental time (Table 2). Results show that both the participation rates (for men) and the mean time of doers have increased over time. The results for the participation rates are particularly interesting as they reveal a large increase in the proportion of fathers who participate in childcare. Their participation rates are still lower than those for mothers, but they have substantially increased. While only 53 percent of full-time employed fathers reported any childcare activities in 1971 (weekly average), this figure had reached 73 percent in 1998. Mothers' participation rates have remained close to 95 percent for the whole period. As to time devoted to childcare by "doers", again an increase of just below one hour per day is observed for both men and women.

Trends in specific types of childcare activities

Most studies of parental time group all childcare activities into a single category. However, if there have been behavioral changes in parenting and in time investment into children, as suggested in Table 2, it is possible that some activities may have benefited from an increase in parental time more than others. In particular, if parents have been emphasizing 'quality' time with children, we may expect activities that involve a high level of interaction

between parents and children, such as playing, to have most benefited from the increase in parental time. An alternative explanation provided in the literature is that the move to suburbs, together with an increase in perceived street dangers, may have prompted parents to spend more time 'ferrying' children to school, friends' homes, etc. (Robinson and Godbey 1997; Hillman, Adams, and Whitelegg 1990).

In order to address this issue, we went back to the original Canadian datasets, and examined the trends in the separate categories of childcare activities.[19] We distinguish three main types of activities: 1) 'Play', which encompasses playing, reading, conversing, helping, teaching, and reprimanding; 2) 'Care', which encompasses general care and medical care; and 3) 'Travel'. Results appear in Figure 3. They suggest that time spent on playing with children and baby-care have both benefited from a systematic increase since 1971. On the other hand, and contrary to what was suggested in the literature, time spent on travel for child-related reasons has not increased. What is also particularly interesting is that the increase was once again observed for both mothers and fathers and for both employed and non-employed parents. The increasing time pressure affecting parents may restrict their time availability, but working full-time has not prevented mothers and fathers from increasing the time that they devote to childcare (just as their non-working counterpart). A further finding of interest is that while there is a large gender gap in the amount of time devoted to baby-care, mothers and fathers devote about the same time playing with children.

Multivariate analysis

The results presented so far were strictly descriptive and did not test whether or not the observed trends were statistically significant. As discussed in the theoretical section of the paper, changes in the composition of the population (e.g., educational level, age of parents) may have

driven the trends in parental time. To see if a significant trend in parental time remains after controlling for these compositional effects, we carried out a series of multivariate analyses on the pooled 1971-1998 Canadian dataset. We included as independent variables the age of the parent, his/her education and employment status, the number of children under the age of 18, and the diary day (weekday vs. weekend).[20] We also included dummies for the year of the survey and used the year 1971 as the reference category.[21] Descriptive sample statistics are reported in Appendix. We carried out regression analysis separately for men and women, and for employed and non-employed mothers, since the descriptive statistics suggested different historical trends for these different subgroups of parents.

Results appear in Table 3. Before commenting on these results, a note of caution about the interpretation of the regression coefficients is warranted. More specifically, the interpretation of the Tobit regression coefficients is the same as for regression coefficients in ordinary least-squares models only if one looks at the Tobit model as modeling a latent variable for which the 'true' value of time spent on childcare activities was observed for all individuals in our sample (Breen 1996; Long 1997).[22] Since almost all parents may be assumed to spend time on childcare activities at one point in time (as opposed to the diary day), the interpretation in terms of latent variable seems reasonable.[23]

Results from the regression analysis suggest that, after controlling for various individual-level determinants, parental time in 1998 still exceeded that in 1971 by almost 1 hour per day for men but only by ½ hour for women. The trend for men suggests a gradual increase since 1971 while for women the earlier years suggest a decrease in parental time (but not a statistically significant one) and an increase in the 1990s. The analysis for employed and non-employed mothers reveals however a more complex story with the historical trend being statistically

significant only for non-employed mothers. As discussed at the end of the paper, a selectivity effect may be operating by which non-employed mothers have been increasingly composed of mothers with a higher "taste" for spending time on childcare. In contrast in the 1960s, and in the context of limited employment opportunities for mothers, the non-employed category would have been a much more heterogeneous group. Interestingly, no other study appears to have picked up this differential trend between employed and non-employed mothers (because the analysis is usually not carried out separately for these two groups).

In terms of individual characteristics, and contrarily to what was expected, an increase in family size was not found to significantly increase the time devoted to childcare. In fact, every additional child decreases the time devoted to childcare by mothers, by about 10 minutes per day. One possible explanation is that each additional child increases the amount of housework and consequently decreases the time availability of mothers. This results, thus, supports the suggestion made by other authors regarding the dilution of parental time and resources with increased family size (Blake 1989). With regard to the age of the parents, results suggest that older parents devote less time to childcare than younger parents, but the coefficients are not statistically significant. In contrast, the education of parents appears to impact parental time in the expected direction, namely that more highly educated parents devote more time to childcare than parents with lower levels of education. The difference is about 40 to 50 minutes per day, with a larger difference for men than women.

Parents' employment status also affects their allocation of time to childcare. Being employed full-time or part-time reduces the allocation of time to childcare by ½ hour per day for men and $1^{1/2}$ hours per day for women. The historical series for Canada unfortunately does not allow us to see the difference between full-time and part-time work, nor does it allows us to test

the possible interaction between the respondent's employment status and that of his/her spouse (the relevant data was not collected in all surveys). Type of the day (weekday vs. weekend) also significantly affects the allocation of time to childcare but in a very different way for mothers and fathers. While fathers devote more time to childcare on weekends, the opposite is observed for mothers. This suggests an interesting division of labor between parents with fathers possibly giving a little "break" to mothers on weekends by increasing their own allocation of time to childcare. We would however need couples' data in order to test empirically this joint household behavior hypothesis.

Overall, what these multivariate results show is that the increase in parental time observed on the basis of simple descriptive statistics still hold while we control for individual-level characteristics that may have affected the historical trends. In other words, even after controlling for characteristics such as employment status and education, a statistically significant historical increase in parental time is still observed (apart for employed mothers). And in line with the descriptive results, the multivariate analysis suggests a decrease in the gender gap, with fathers increasing their allocation of time to childcare to a larger extent than mothers.

Conclusion

Time spent by parents on their own children does not enter traditional measures of productivity nor is it factored in national accounts. Yet, it is a major form of investment into children, and one that appears to have increased since the 1960s. Despite the increase in women's labor force participation, and despite the time pressures from work, today's parents appear to be devoting more time to childcare than they were 40 years ago.

Results presented in this paper suggest four additional conclusions. First, paid work does not appear to substantially impinge on the investment that parents are making in children—at least not directly. Employed parents do devote slightly less time to their children than non-employed parents, but the difference is small compared to the difference in time devoted to paid work. Evidently, parents appear to be preserving their time with children, mainly by reducing time devoted to leisure and personal activities (including sleep). Paid work may however have the consequence of lowering the "taste" for children because it involves devoting more time to paid and non-paid work. For example, our results show that employed mothers in the 1990s devoted 10.6 hours per day to paid and non-paid work (housework and childcare) as compared to 8.7 hours for non-employed mothers (Table 1). Secondly, activities that involve a higher degree of parent-child interactions, such as playing, appear to have mostly driven the overall increase in time spent on childcare (along with baby-care). Thirdly, both mothers and fathers have increased their time investment in children. Fathers still devote less time to childcare than mothers, but the gender difference has narrowed in many nations including Canada. Finally, the results for employed and non-employed mothers suggest that a selectivity effect may be operating involving a greater concentration of mothers with a higher "taste" for spending time with children among the non-employed mothers. An alternative explanation for the different historical trends among employed and non-employed mothers may be that they may be a general social trend asking for parents to devote more time to their children. However, employed mothers may already be so time-crunched that they may be unable to devote more time to their children.

Proponents of the time-famine thesis may be right in that today's parents are hurried and under significant time pressure. But despite these pressures, parents have managed to preserve time devoted to children and have even increased time devoted to children. For sure, employed

mothers do indeed spend less time on childcare than housewives --- but the difference is much less than the difference in the number of hours of paid work. For working mothers, the expression ‘second shift’ seems indeed to apply (Hochschild 1989). What is also particularly interesting is that both employed mothers and housewives have increased the time that they spend with children. These trends suggest some major behavioral changes in the population: changes that have resulted in more time being devoted to children and not less. Theoretically, what these results also suggest is that the quantity-quality trade-off argument regarding children may well apply. Since the 1960s fertility rates have decreased in all industrialized countries, but the time investment in children has increased. In contrast, our results provide little support for the time availability perspective. Women have increased their labor force participation since the 1960s, and data suggest that the annual number of work hours may even have increased in some countries (among full-time employed individuals) (Hayden 2003), but these trends have not resulted in a decrease in parental time. Instead, our results are indicative of global trends, possibly motivated by societal norms, towards investing more time on children –even if this means cutting down on one’s own personal time and leisure.

The paper also suggested large variations across countries in the time devoted to childcare by parents. This is something that we were not able to fully analyze in the context of this paper but one which calls for further examination. In particular, it will be interesting to examine whether country-level characteristics, such as work hour legislations and parental leave schemes, translate into more, or less, time being devoted to children. Finally, the paper being restricted to two-parent families, it would be important to examine parental time investment into children for single-parents and for step-parents. Analyses by Sandberg and Hofferth (2001), on the basis of American data, suggest that the increase in the proportion of single-parent families

had has a negative effect on the time that children spend with their parents. However, the impact of family structure on parental time has not been examined in other countries.

Endnotes

1. For a summary of the controversy concerning the trends in parental time in the United States involving William Mattox and John Robinson, see Whitman (1996). Interestingly, some 20 years earlier, trends in leisure time also became the subject of much controversy, see: Linder (1970) and Hirschman (1973).

2. Data from children's time-use diaries in the United States led to the same conclusion. While children are indeed spending today more time in preschools and school programs than in the past, they are nonetheless spending more time with their parents (Hofferth and Sandberg 2001).

3. Such an educational differential was not found in Sweden (Hallberg and Klevmarken 2000).

4. The classic reference in the theory of time allocation is Becker (1965). However, Becker's fertility theory provides us with a better framework to examine parenting time.

5. And just like the quantity-quality tradeoff, parents are also confronted to a time–money tradeoff: a tradeoff involving allocating time to work versus time to their children, and allocating time to their own children versus paying others to devote their time to their children.

6. For more on this topic see Bainbridge and Garfinkel (2000).

7. Mothers' participation in the labor force may also have increased monetary resources that could be devoted to children. However, as mentioned earlier, we are not focusing on monetary resources in this paper.

8. For a discussion of the gender division of labor from an economic perspective, see Cigno (1991).

9 The Canadian 1998 data distinguishes biological and step-parents and would allow estimates of the respective time devoted to childcare. The data was however not collected in earlier surveys.

10. Trends in the quality of childcare facilities may also have affected parental time. If the quality of such facilities had increased, we could expect parents to be more likely to outsource their time to such facilities.

11. This may indeed be the case in view of campaigns stressing the importance of reading to children, for example.

12. Sandberg and Hofferth (2001) use a decomposition technique to estimate the respective effects of changes in the composition of the population and changes in behavior to explain the overall changes in children's time spent with parents in the United States between 1981 and 1997. They conclude that changes in behavior translated into an increase in children's time spent with parents, and by far outweigh the decrease associated with compositional changes.

13. Robinson and Godbey (1997) make this observation for all types of activities, rather than specifically for childcare activities.

14. We do not formally test this assumption in this paper. In fact, some forms of non-childcare activities may also involve a high level of parent-child interaction. Going shopping with a child would be an example.

15 We do so only for the Canadian analysis as this information is not part of the cross-national dataset.

16 More specifically, the ordinary least-squares regression model would produce inconsistent estimates (Long 1997).

17 In the graphs based on the multinational dataset, we only retained surveys with a minimum of 20 cases for the specific subgroup (gender and employment status). In other analyses (not reported here), we carried out the analysis on a smaller subset of countries (using only data from the World5.5 version of the dataset). The general trends are the same as those reported here although the slopes (i.e., the increase in parental time) are steeper.

18 The linear trend may not be the best way of describing the data. Fitting a lowess curve instead suggest no trend in the earlier period, and an increase since 1980.

19 The harmonized version of the Canadian datasets does only contain data on the total time devoted to childcare, without breakdown by type of childcare activities. We therefore had to use the original datasets for the analysis by type of childcare activity.

20 Although the sample is restricted to parents with at least one child under the age of five, it does not preclude them from having older children. Unfortunately, the earlier surveys did not contain the information to code the exact number of younger and older children.

21 One concern was that because the earlier surveys did not cover the twelve months of the year, part of the historical trend would capture historical difference in the year, or part of the year, covered. This would be the case if there were strong monthly variations in parental time. In order to check this, we carried out a series of additional regression models in which we included a series of monthly dummy variables. For fathers, the results suggested that there were no monthly variations. The historical trends with or without these monthly dummies were therefore very similar. For mothers, however, the result did suggest monthly variations in time devoted to childcare. Consequently, the

historical trends with or without the monthly dummies differed substantially. In particular, the inclusion of the monthly dummies wiped out the historical trend. However, since the monthly variations did not reveal any meaningful seasonal patterns, we decided to report in this paper the results without the monthly dummies.

22 In reality our data is censored at zero minutes: some of the individuals who spent zero minutes on childcare on the diary day may spend time on childcare on other days, while others may never spend time on childcare, or would even devote negative time if this were possible!

23 Results not reported here show in fact that the OLS results are very similar to the Tobit ones in terms of the statistical significance of the regression coefficients. However, the magnitude of the regression coefficients differs somewhat between the Tobit and OLS models.

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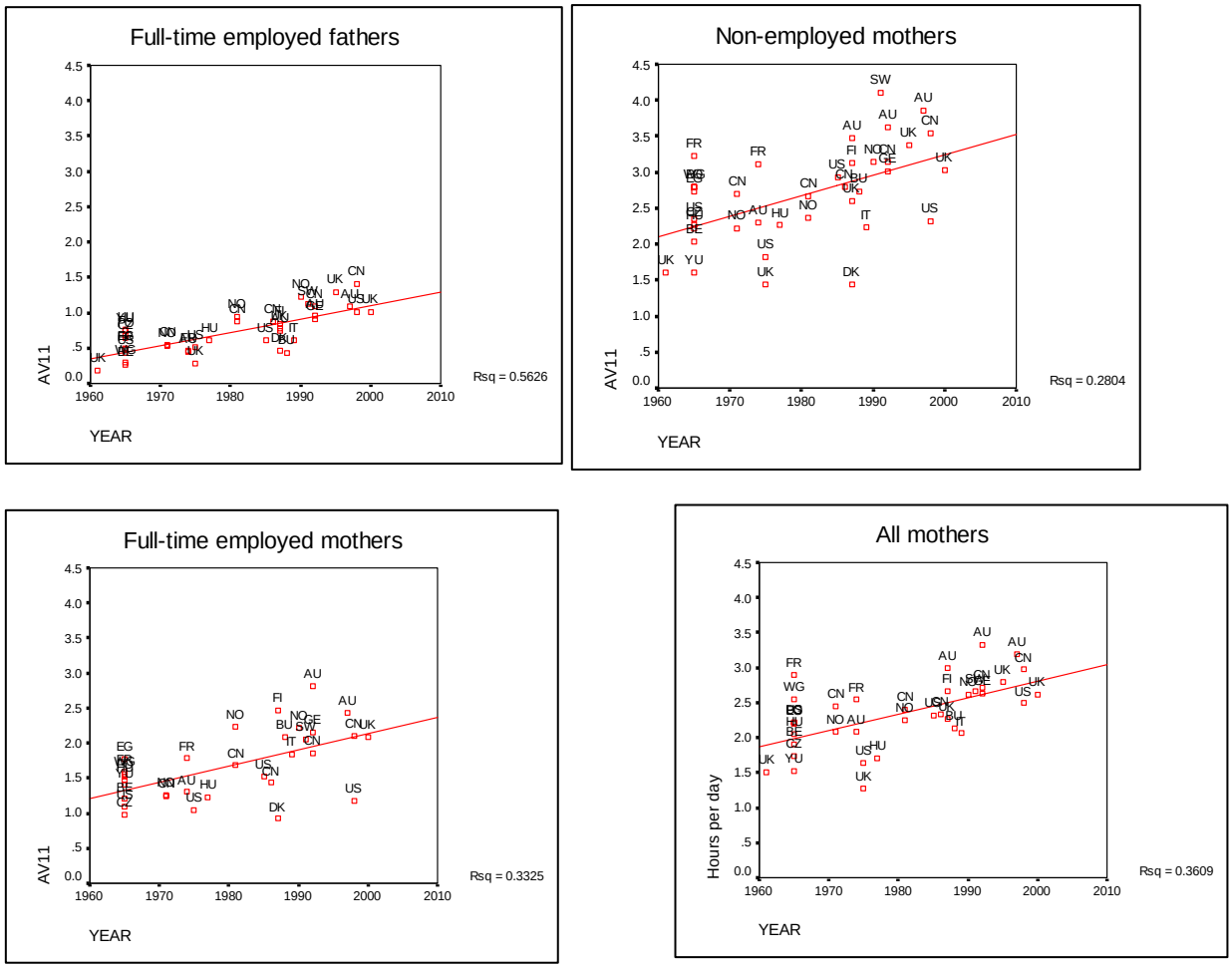
Appendix

The Multinational Time Use Study (MTUS) is a harmonized version of dataset from more than 20 countries and covering the period 1961 to 2000. Information on the variables and information on how to access the data is available on the MTUS website: http://www.iser.essex.ac.uk/mtus/index.php. Information on the surveys included in this paper appears in Table A1.

Details on the Canadian sample statistics are reported in Table A2.

Figure 1: Mean time spent on childcare activities (in hours per day) for married or cohabiting parents aged 20-49 years old with at least one child under the age of five, by gender and employment status, 1961-2000.



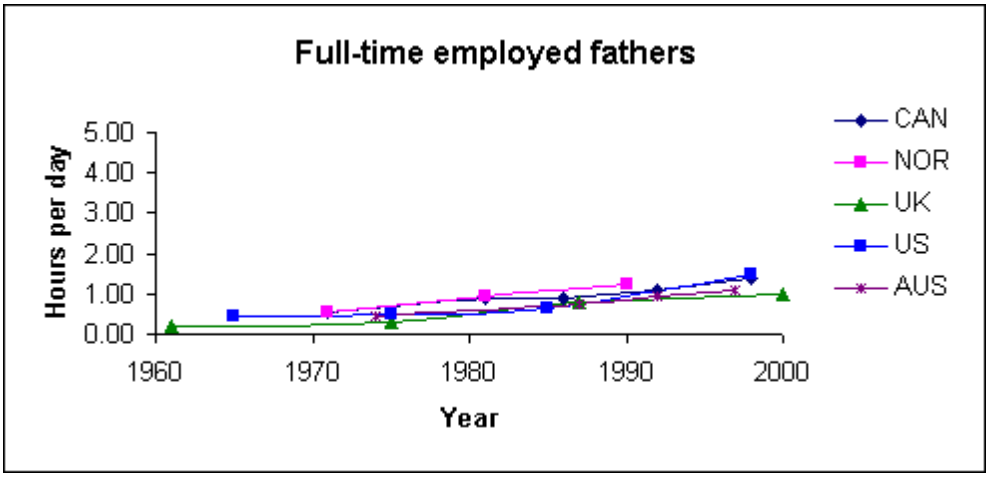
Note: For the country codes, see Table A1 in Appendix.

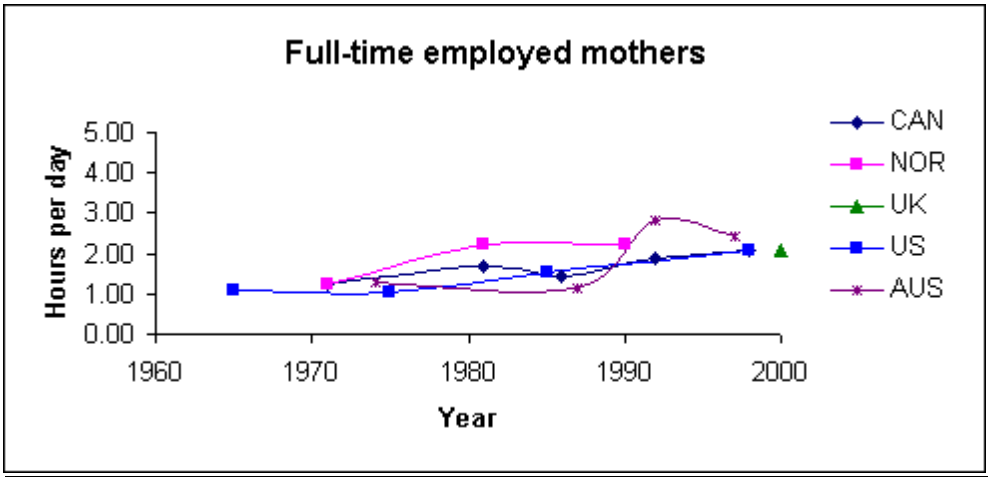
Unstandardized regression coefficient (increase in parental time per year: in hours per day):

- Full-time employed fathers = .019
- Full-time employed mothers = .023
- Non-employed mothers = .029
- All mothers = .024

Source: Authors' computation from MTUS data.

Figure 2: Mean time spent on childcare activities (in hours per day) for married or cohabiting parents aged 20-49 years old with at least one child under the age of five, by gender and employment status for selected countries, 1961-2000.





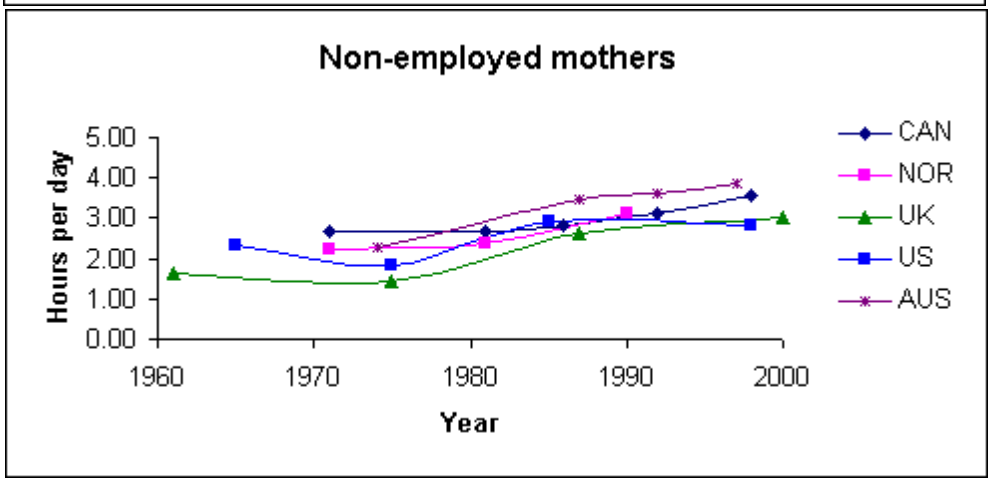
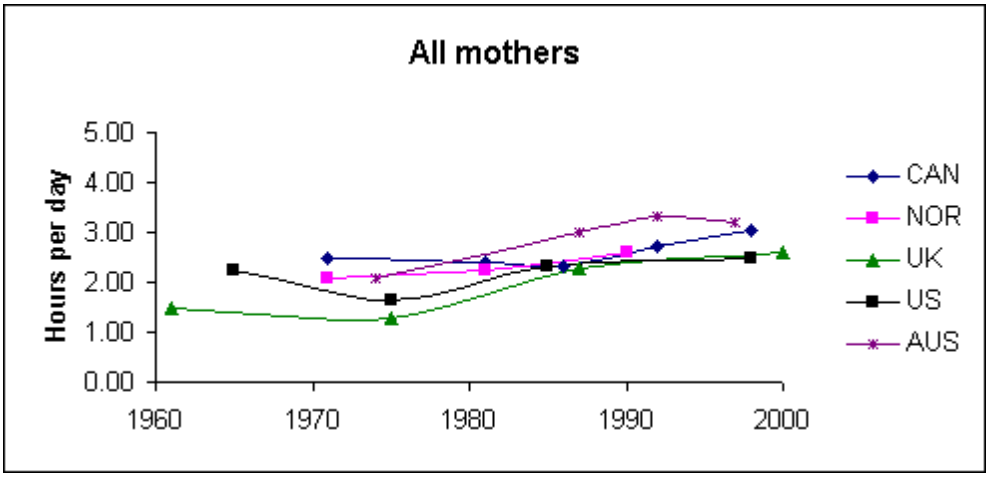


Figure 2 (continued)



Note: Only the results for the year 2000 are reported for the UK for full-time employed mothers because of too few cases for the earlier years. Data for UK 1995 is excluded from all graphs because of seasonal biases.

Source: Authors' computation from MTUS data.

Figure 3: Mean time spent on selected childcare activities (in hours per day) for married or cohabiting parents aged 20-49 years old with at least one child under the age of five, by gender and employment status, Canada 1971—98.

Note: The successive bars represent results for 1971, 1981, 1986, 1992, and 1998 respectively. The current version of the 1981 dataset does not allow us to distinguish the different type of activities. The result for 1971 for non-employed fathers is not reported because of too few cases.

Source: Authors' computation from MTUS data.

Table 1. Mean time spent on selected activities (in hours per day) for married or cohabiting parents aged 20-49 years old with at least one child under the age of five, by gender and employment status and historical period, average across selected countries[1] (total = 24 hours)

Gender	Employment Status[2]	Historical Period[3]	PAID	EDUC	HOUSE	CCARE	TV	FREE	SLEEP	EAT	PERS
Men	Full-time	1960s	7.8	0.2	1.6	0.5	1.2	2.7	8.1	1.2	0.7
		1970s	6.8	0.2	1.7	0.6	1.7	2.8	8.0	1.2	0.8
		1980s	6.9	0.1	1.9	0.9	1.7	3.0	7.8	1.1	0.7
		1990s	6.7	0.1	2.1	1.1	1.7	2.6	7.8	1.1	0.7
Women	Full-time	1960s	5.4	0.1	4.6	1.5	0.8	2.0	7.8	1.1	0.8
		1970s	4.8	0.1	3.7	1.4	1.1	2.4	8.1	1.1	0.9
		1980s	4.3	0.1	3.8	2.0	1.1	2.8	8.2	1.1	0.7
		1990s	4.7	0.1	3.6	2.3	1.2	2.2	8.0	1.2	0.8
	Non-employed	1960s	0.2	0.0	7.0	2.4	1.2	2.5	8.6	1.5	0.8
		1970s	0.2	0.1	5.5	2.4	1.8	3.2	8.4	1.4	0.9
		1980s	0.3	0.2	5.1	3.0	1.6	3.4	8.5	1.3	0.8
		1990s	0.2	0.1	5.1	3.4	1.6	3.2	8.3	1.3	0.9

Where: FT: full-time employed (30 or more hours per week); NE: not employed; PAID: paid work; EDUC: Education; HOUSE: Housework; CCARE: Childcare; TV: Television; Free: Other leisure; SLEEP: sleep and naps; EAT: Meals and snacks at home; PERS: other personal care activities (bathing, dressing, receiving medical care).

Notes:

1- The average was not adjusted to take into account the size of the sample size in each survey.
2- The employment status was coded from a question about the respondent's main activity during the week prior to the survey. Although some people may reply that they were not-employed, they may have devoted time to paid work on the diary day.
3- The 1990s surveys also include UK 2000.

Source: Authors' computation from MTUS data.

Table 2. Participation rate in childcare activities and mean time spent on childcare activities (in hours per day) by participants, married or cohabiting parents aged 20-49 years old with at least one child under the age of five by gender and employment status, Canada, 1971-1998.

GENDER	EMPLOY-MENT STATUS	YEAR	PARTICIPATION RATE[1]	MEAN HOURS FOR PARTICIPANTS[2]	OVERALL MEAN TIME SPENT ON CHILDCARE	NUMBER OF CASES
Man	FT	1971	0.53	1.03	0.54	147
	FT	1981	0.60	1.42	0.86	184
	FT	1986	0.54	1.63	0.88	550
	FT	1992	0.66	1.64	1.09	459
	FT	1998	0.73	1.94	1.42	419
	NE	1971	n/a	n/a	n/a	5
	NE	1981	n/a	n/a	n/a	6
	NE	1986	0.54	2.48	1.33	73
	NE	1992	0.68	2.18	1.48	65
	NE	1998	0.82	2.70	2.20	56
Woman	FT	1971	0.95	1.50	1.42	33
	FT	1981	0.95	1.95	1.85	55
	FT	1986	0.83	1.73	1.43	237
	FT	1992	0.91	2.04	1.86	174
	FT	1998	0.94	2.22	2.08	165
	NE	1971	0.98	2.76	2.72	149
	NE	1981	0.97	2.77	2.68	122
	NE	1986	0.94	3.02	2.82	457
	NE	1992	0.97	3.26	3.17	374
	NE	1998	0.99	3.65	3.62	289

FT: Full-time employed; NE: Non-employed.

Notes:

1- Participation rate refers to the proportion of parents who devoted at least 1 minute to childcare on the diary day.

2- Participants refer here to parents who devoted at least 1 minute to childcare on the diary day.

Source: Authors' computation from MTUS data.

Table 3. Tobit regression results for time spent on childcare activities (in number of hours per day) for married or cohabiting parents aged 20-49 years old with at least one child under the age of five by gender, Canada 1971—98.

	All fathers		All mothers		Employed mothers		Non-employed mothers	
	b	**Robust z**	**b**	**Robust z**	**b**	**Robust z**	**b**	**Robust z**
Age = 30-39[1]	-2.66	(0.32)	4.39	(0.64)	15.43	(1.76)	-2.24	(0.25)
Age = 40-49[1]	-18.19	(1.40)	-22.48	(1.63)	13.57	(0.58)	-41.83	(2.67)**
Education = Med[2]	21.50	(2.09)*	28.90	(3.26)**	47.08	(3.36)**	24.22	(2.23)*
Education = High[2]	48.71	(5.11)**	38.48	(4.81)**	53.69	(4.41)**	32.94	(3.35)**
Employed[3]	-24.06	(2.35)*	-87.05	(13.39)**				
Weekend (yes=1)	31.21	(3.62)**	-19.67	(2.81)**	11.10	(1.09)	-36.24	(3.94)**
Number of kids	3.30	(0.85)	-9.95	(2.34)*	-4.00	(0.66)	-10.58	(1.96)*
Year=1981	24.57	(1.83)	-3.82	(0.35)	8.82	(0.55)	-14.68	(1.07)
Year=1986	21.87	(1.79)	-13.43	(1.36)	-29.85	(1.99)*	-8.83	(0.73)
Year=1992	45.23	(3.99)**	10.79	(1.08)	0.56	(0.04)	12.18	(1.00)
Year=1998	67.76	(5.42)**	29.61	(2.80)**	9.35	(0.61)	35.30	(2.68)**
Constant	-27.81	(1.64)	173.26	(14.79)**	58.74	(3.51)**	184.67	(13.20)**
N cases	2066		2242		756		1486	
Left-censored	753		138		80		58	
Log likelihood	-8971.02		-11940.59		-3829.459		-8074.16	
Wald chi-square	82.74**		224.04**		48.14**		67.23**	

* significant at the .05 level; ** significant at the .01 level

Notes:

1- Age 20-29 as reference category
2- Less than high education as reference category
3- Not employed as reference category

Source: Authors' computation from MTUS data.

Table A1: Technical details on the surveys

Country[1]	Code	Year	Age	N of cases[2]	Response Rate (%)	Diary	Survey Period[3]	MTUS Version[4]
Australia	AU	1974	18-69	1493	63	1-day	n/a	W5.0
Australia	AU	1987	15+	1011	56	2-day	1 month	W5.5-2
Australia	AU	1992	15+	3612	83	2-day	11 months	W5.5-1
Australia	AU	1997	15+	3528	84	2-day	4 periods	W5.5-2
Belgium	BE	1965	18-64	2077	60	1-day	2 months	W5.0
Bulgaria	BU	1988	0+	27506	n/a	1-day	12 months	W5.0
Canada	CN	1971/2	18-64	1014	72	1-day	1 month	W5.5-1
Canada	CN	1981	15+	759	46	1-day	3 months	W5.5-1
Canada	CN	1986	15+	2446	80	1-day	2 months	W5.5-1
Canada	CN	1992	15+	2430	77	1-day	12 months	W5.5-1
Canada	CN	1998	15+	2470	78	1-day	12 months	W5.5-1
Czechoslovakia	CZ	1965	18-64	2193	100	1-day	2 month	W5.0
Finland	FI	1987/8	10+	4068	74	2-day	12 months	W5.5-1
France	FR	1965	18-64	2805	90	1-day	2 months	W5.0
France	FR	1974/5	18+	6641	66	1-day	12 months	W5.0
Germany-West	WG	1965	18-64	2478	80	1-day	4 months	W5.0
Germany-East	EG	1966	18-64	2152	90	1-day	2 months	W5.0
Germany[5]	GE	1991/2	12+	8486	Quota	2-day	4 months	W5.5-1
Hungary	HU	1965	18-64	1994	95	1-day	1 month	W5.0
Hungary	HU	1976/7	15-69	6925	96	1-day	12 months	W5.0
Italy	IT	1988/9	3+	9933	70	1-day	12 months	W5.5-1
Norway	NO	1971	16-74	2522	58	2-day	12 months	W5.5-2
Norway	NO	1981	16-74	2228	65	2-day	12 months	W5.5-2
Norway	NO	1990	16+	1926	64	2-day	12 months	W5.5-1
Poland	PO	1965	18-64	2759	95	1-day	2 months	W5.0
Sweden	SE	1991	20-64	2508	75	2-day	9 months	W5.5-1
UK	UK	1961	15+	2363	54	7-day	1 month	W5.0
UK	UK	1975	5+	549	60	7-day	4 periods	W5.5-1
UK[6]	UK	1987	16+	549	70	7-day	1 period	W5.5-1
UK[7]	UK	1995	16+	390	70	1-day	1 month	W5.5-1
UK	UK	2000	8+	4160	45	2-day	12 months	W5.5-2
USA	US	1965	19+	990	82	1-day	3 periods	W5.5-1
USA[8]	US	1975	18+	877	72	1-day	3 months	W5.5-1
USA[9]	US	1985	18+	1111	56	1-day	12 months	W5.5-1

Country[1]	Code	Year	Age	N of cases[2]	Response Rate (%)	Diary	Survey Period[3]	MTUS Version[4]
USA	US	1998	18+	297	56	1-day	12 months	W5.5-2
Yugoslovia	YU	1965	18-64	2125	97	1-day	3 months	W5.0

Notes:

1- More countries have carried out time use surveys, however we only used here surveys which have been harmonized into a common set of variables. For reason of non-comparability, we however excluded Austria 1992, Denmark 1964, Denmark 1987, Israel 1992, the Netherlands 1975-1995, and the United States 1992. Note also that not all the surveys included here use a nationally representative sample (geographically). However, the time use literature suggests that time use averages are quite robust and vary little by geographical areas (see for example Gershuny 2000).

2- The sample size refers to the number of individuals. The actual number of cases is larger in surveys for which 2 or 3-day diaries were collected.

3- While cross-survey variations in the coverage of the twelve months of the year may raise concern about the comparability of the data, analyses suggest that parental time varies little by the month of the year with the exception of the summer months. Most of the surveys that only covered selected months usually do not include summer months.

4- Indicates which release of the survey was used in this paper, where W5.0: World 5.0 version; W5.5-1: World5.5 Release 1; W5.5-2: World5.5 Release 2.

5- The German 1991/2 survey used a quota sample. No information on the corresponding non-response rate is available.

6- UK 1987: In the World5.0 version of the MTUS dataset, UK 1983/4 and UK 1987 were combined and called UK 1985. In World5.5, we only included the 1987 survey.

7- UK 1995: The response rate of the time-use module was high, 93%, but we report here the overall response rate of the Omnibus survey.

8- USA 1975: Includes only data from the main respondents and from the first wave of this longitudinal dataset.

9- USA 1985: Data were collected on individuals aged 12, but only the sample for the population 18+ has been publicly released.

Sources: Authors' tabulation from information contained in Fisher (2000) and various country-specific documents.

Table A2: Descriptive sample statistics, Canadian time use surveys 1971—1998 (married or cohabiting parents aged 20-49 with at least one child under the age of 5) (weighted).

MEN

		1971	%	1981	%	1986	%	1992	%	1998	%
Age	**20-29**	88	53.7	72	41.1	198	32.6	153	26.5	117	19.5
	30-39	67	40.9	92	52.6	357	58.8	323	55.9	382	63.7
	40-49	9	5.5	11	6.3	52	8.6	102	17.6	101	16.8
Education	**Low**	82	50.0	46	26.6	137	24.8	102	18.0	83	14.7
	Medium	23	14.0	58	33.5	107	19.3	134	23.6	96	17.0
	High	59	36.0	69	39.9	309	55.9	331	58.4	387	68.4
Day	**Weekend**	43	26.1	57	32.4	163	26.8	154	26.6	205	34.1
	Weekday	122	73.9	119	67.6	445	73.2	425	73.4	396	65.9
N of children	**(mean)**	2.19	---	1.95	---	1.69	---	1.89	---	1.96	---
Employed	**No**	14	8.5	13	7.4	72	11.9	79	13.6	117	19.5
	Yes	151	91.5	163	92.6	535	88.1	500	86.4	484	80.5

WOMEN

		1971	%	1981	%	1986	%	1992	%	1998	%
Age	**20-29**	95	65.5	80	50.0	289	46.2	243	44.5	162	30.2
	30-39	40	27.6	75	46.9	312	49.8	285	52.2	328	61.2
	40-49	10	6.9	5	3.1	25	4.0	18	3.3	46	8.6
Education	**Low**	77	54.6	37	23.1	140	24.2	67	12.5	50	10.1
	Medium	30	21.3	69	43.1	149	25.8	169	31.5	75	15.1
	High	34	24.1	54	33.8	289	50.0	300	56.0	371	74.8
Day	**Weekend**	38	26.4	39	24.2	189	30.3	164	30.1	170	31.8
	Weekday	106	73.6	122	75.8	435	69.7	381	69.9	365	68.2
N of children	**(mean)**	2.08	---	1.90	---	1.70	---	1.98	---	1.94	---
Employed	**No**	115	79.9	104	64.6	411	65.8	355	65.0	334	62.3
	Yes	29	20.1	57	35.4	214	34.2	191	35.0	202	37.7