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Availability:

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UNIVERSITÀ DEGLI STUDI DI TORINO

This is an author version of the contribution published on:

Questa è la versione dell'autore dell'opera:

[Do Parents Coordinate Their Work Schedules? A Comparison of Dutch, Flemish, and Italian Dual-Earner Households, European Sociological Review, vol 25, 5, 2009, DOI: 10.1093/esr/jcn077]

The definitive version is available at:

La versione definitiva è disponibile alla URL:

[www.esr.oxfordjournals.org]

Title:

**Do Parents Coordinate Their Work Schedules?
A Comparison of Dutch, Flemish and Italian Dual-Earner Households.**

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Manuscript submitted for publication in **European Sociological Review**

Revision to adopt the comments of the referees (July 2008)

Abstract

As a consequence of the rising number of dual earner households, many contemporary couples in Europe face two potentially conflicting job schedules when figuring out how to allocate their time over a week. In this article we study how dual-earner couples with children organise their working time in Belgium, Italy and The Netherlands. We place working time coordination explicitly in a comparative framework to allow cross-country differences in time scheduling mechanisms to be revealed. We define working time coordination as an act that leads to hours of paid work performed by both parents at the same moment and of which the joint nature cannot be explained by factors other than the partners' potential to communicate on the timing of their work. Our main findings are that: (1) parents actively coordinate their working times in all three societies; (2) On average, Italian and Flemish dual earner parents tend to synchronise (increase their work time overlap) which indicates that parents aim at spending non-market time jointly; (3) Dutch dual earner parents tend to de-synchronise (decrease work time overlap) which indicates that the latter tend to maximize the amount of time that at least one parent is out of the job.

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Do Parents Coordinate Their Work Schedules?

A Comparison of Dutch, Flemish and Italian Dual-Earner Households.

Introduction

Over the past decades, female labour market participation, and consequently the number of dual-earner households, has increased across Europe. While the common trend is upward, there are differences from country to country in terms of both the size and the scope of the increase. The focus countries of the present study, i.e. Italy, the Netherlands and Belgium (Region of Flanders), illustrate this variation well.

By the turn of the century, the employment rate of married women in Italy had risen to just over 50%, which remained under the European average and well below the figure for Belgium and the Netherlands, where about three-quarters of married women aged 25-49 were in the labour market (Eurostat LFS, online database). Moreover, of all Dutch women aged 25-49, some 71% had a part-time working arrangement in 2006, compared to 40% in Belgium and 28% in Italy (Eurostat LFS, online database).

The increase in dual-earner couples is of interest for the work-life balance issue, since the presence of two job schedules makes the coordination of family time more difficult than in a traditional male-breadwinner household. Among couples where the male is the breadwinner, there are no coordination issues with respect to spouses' working hours: when the husband is at work, the wife is usually at home looking after the children or performing household tasks. Leisure time can be consumed jointly when he too is at home. In dual-earner couples, there are two individual work schedules to take into account, which may nevertheless be combined into a single schedule. This combined work schedule usually starts when one of the spouses begins work and ends when both spouses have finished. At each time point of this combined schedule, there are three possible situations: 1) both spouses are at work, 2) one of the two spouses is at work, and 3) neither of the spouses are at work. Joint leisure time may be consumed when both spouses are away from work. However, the presence of young children adds an element to the coordination puzzle: when both parents are working, the children have to be cared for by someone else (grandparents, relatives, childcare centres, babysitters, etc). When one or both parents are at home, the care need is met, in principle at least.

This article focuses on the coordination of work schedules of dual-earner parents. Compared to the broader issue of labour supply, this topic has been little investigated in labour economics and sociology.

Economic studies usually focus on how spouses choose the total amount of labour that maximizes utility while they tend to ignore how spouses time these labour hours. Yet, a household may choose to maximize the number of hours that both spouses work simultaneously or to minimize the number of hours that neither spouse is at home. In the first case, the potential joint leisure time of the spouses is maximized, while in the second, the cost of paid childcare is minimized. Alternatively, the decision may be seen to distinguish parents who prefer non-parental over parental care. In order to be able to explain the

household decision process accurately, such timing issues need to be taken into account. Empirical studies that test whether spouses coordinate their work schedules include those by Hamermesch (2000, 2002), Hallberg (2003), Jenkins and Osberg (2005) and van Klaveren and Maassen van den Brink (2007). The main finding of these studies is that spouses tend to coordinate their work schedules in order to spend more leisure time together.

In sociology, the issue of time coordination can be framed within the work-life balance problem and the transformation engendered by greater flexibility of the economy on the one hand and the changing role of women in the family and society on the other (Crompton 2006; Moen 2003). Sociologists with an interest in time-use have incorporated timing elements and coordination aspects into their empirical studies only recently, (Lesnard 2004; Sullivan 1996; Rydenstam 1994).ⁱ Beyond time-use research, the issue of work schedule coordination within the family has also become more relevant to other scholars, in view of the de-standardization of working hours imposed by the growing service economy (sometimes referred to as the “24/7 economy”, Presser 1999; 2003). De-standardization of work schedules decreases the likelihood of partners having coordinated and overlapping working hours. Hours being equal, a poor alignment of work schedules within households is generally considered negatively as a threat to family solidarity, since the time available to spend together is reduced.ⁱⁱ Furthermore, it has been shown that non-standard work schedules can have negative effects on children’s well-being (Strazdins *et al.* 2004).

However, although the general sociological view on de-synchronization is negative, some potential “benefits” have been postulated and demonstrated empirically. For example, de-synchronization may allow dual-earner couples to arrive at a more equal division of housework (Presser, 1994) and childcare responsibilities (Lesnard, 2005). In this sense, having non-overlapping schedules may constitute a resource and an alternative to childcare services for working parents, rather than a harmful feature of contemporary family life.

From a policy perspective, more flexible working times could become one of the ingredients of a policy mix (alongside part-time contracts, self-determination in relation to the exact timing of working hours, financial subsidies, affordable childcare services, etc) devised specifically to facilitate work-family reconciliation, which is sometimes complicated by rigidities with respect to labour hours. However, in sociological studies, the option of personalized arrangements for the household work schedule is often overlooked. Job hours, with the exception of selected *élite* workers (e.g. highly qualified professionals, scientists, researchers, etc), are considered to be more or less fixed and controlled by the employer, leaving little room for personal adjustments (Kingston and Nock, 1987). And this assessment is not without grounds: the majority of employees in Europe indeed report that they work fixed or staggered hours (about three-quarter of respondents), with only a minority (10-12%) indicating that they have flexible working-time arrangements (Eurostat, 2007).ⁱⁱⁱ This does not mean, however, that workers have zero degrees of freedom over the choice of working hours. Preferred working hours or the number of days worked may after all have inspired the choice of job in the first place. This point is equally relevant to the timing debate. If two spouses have the option of working four days per week but with a different day off, their choice may save them two days

of paid childcare. Second, even small margins of autonomy (perhaps unnoticed when directly asked for in a questionnaire) can be used to adjust one's own work schedule to that of one's partner. However, nobody expects absolute freedom and complete randomness of work timing, simply because, in our society, economic activities are interdependent and people generally tend to avoid working at night.

In this study, we examine whether there is evidence of working time coordination and, if so, how this coordination varies over different household types and national contexts, i.e. Belgium (Region of Flanders), Italy and the Netherlands. The novelty of this analysis lies in the fact that the topic is placed in a comparative framework that reveals interesting differences between countries regarding the various ways in which couples adjust their work schedules. We restrict ourselves in this study to dual-earner couples with young children (aged 12 or under), because in such households the coordination of working time is highly relevant, both as an alternative to childcare services and as a strategy to optimize family time (parents-child and spouses' time). We are aware that the decision to have kids is correlated with the timing of work, but the modelling of this choice is beyond the scope of the present article.

In order to obtain a measure of working time coordination, we use detailed information on work schedules and construct a variable that measures the working time overlap per week (*WTO*). For a dual-earner household, *WTO* represents the number of hours during which spouses perform paid work simultaneously. Since two complete strangers may also have a certain degree of *WTO*, due to common characteristics that to an extent predestine them for similar jobs and work schedules, we are interested in that part of *WTO* which can be attributed only to spouses' active coordination. Using a methodology proposed by van Klaveren and Maassen van den Brink (2007), we are able to distinguish between that part of *WTO* caused by variations in individual and household characteristics and the part resulting from active (purposive) coordination between the spouses. Moreover, we test how the variation in *WTO* that may be attributed to spouses' coordination differs for different household types.

This article is organized as follows. After the data description, we define the main concepts and hypotheses and outline the method applied. Then we provide details on the application of the method to our data and present the main findings. Finally we discuss our results.

Data description

For the purpose of this comparative study, we rely on three distinct sources of time-use data. In the following paragraph, we describe their respective characteristics and discuss the harmonization efforts made with a view to enhancing the comparability of measures. Data for the Belgian region of Flanders stem from the Flemish Families and Care Survey (FFCS) of almost 2000 Flemish households^{iv}, which was conducted between November 2004 and May 2005. The main purpose of the survey was to investigate how Flemish parents organize care for their children. As part of the study, parents and their children were

asked to fill out time-use sheets. Additionally, every parent in the household at the time of the interview was asked to produce a weekly work schedule. In this schedule, they were required to indicate for each day of the week outside holiday periods when they were actually working. For this purpose, a pre-structured grid with half hour slots was made available to the respondents. For the purpose of the present article, we focus on families with two employed parents, of which the aforementioned sample contains 475 observations. To avoid bias through sample selection, data were weighted.

The Italian data were taken from the Time-use Survey carried out by ISTAT (Italian Statistical Institute). Data collection took place from April 2002 to March 2003. The overall sample size was 55773 cases, drawn from 21075 households. Household members filled in a single-day time-use diary and a questionnaire providing background information. People aged 15 and over were provided with a weekly work diary, designed specifically to capture all paid work episodes of at least fifteen minutes occurring during a randomly designated week. The weekly diaries and related questionnaires provided the data used here. After the selection of the relevant cases (dual-earner couples with young children), there remained 1809 useful observations, corresponding with those couples for whom both weekly diaries were available. All observations were weighted with coefficients provided directly by ISTAT.

The Dutch data were collected in December 2005 in the so-called NIPO Post-Initial Schooling Survey. They relate to a cross-section of the Dutch population aged 16 to 64. The survey included specific questions with regard to the exact timing of work among dual-earner couples.^y So unlike the Flemish and the Italian data, the Dutch information on working times was gathered by means of direct questions rather than time-use diaries. Various questions were asked in order to obtain accurate work timing information. Control questions were included, in order to minimize the effort required from parents to fill in their work schedules. Parents were asked (1) on which day of the week they usually work and (2) whether they work on the same hours each day. If a spouse answered the second question affirmatively, then he or she had to fill in the working times for only one of the days he or she is working. On the other hand, if a spouse did not answer the second question affirmatively, then he or she had to fill in the working times for each day of the week they usually work. This information suffices to determine the weekly working hours. In our sample, we have information on 682 couples who both perform paid work and have at least one child aged under 13.

To enhance comparability, the data were harmonized ex-post. First, we selected couple households where both parents were employed (full-time or part-time) and with at least one child under the age of 13. Second, we recoded variables to obtain similar measures of the different independent variables. Last, we recoded the time values into hourly measures. Nevertheless, the reader should bear in mind that our harmonization does not eliminate completely the differences occasioned by different collection methods and the questions' wording. We shall point out potential effects of these differences at various instances during our analyses. However, since no better data were available to the authors at the time, and as we see no way to improve them further, we assume the data at least serve the exploratory purposes of this article.

Finally, sample sizes differ considerably and, hence, the averages shown can be expected to be more reliable for Italy than for Flanders and the Netherlands. Therefore, we will systematically use statistical significance tests when discussing the results.

Working time overlap and active schedule coordination

Concepts and hypotheses

The starting problem for dual earner parents is time allocation to three categories of activity: paid work, childcare and leisure (to be spent jointly or individually, but here we focus on joint leisure). Time allocation includes also timing considerations and in particular we focus on the timing of paid work. We assume that parents interact with each other looking for a solution to the timing problem that should be satisfactory, if not optimal, and possibly efficient. However the outcomes of parents' interactions are likely to be different as contexts of action are different. Contexts are represented by the set of institutional arrangements (labour markets, childhood and parenthood public policies, working hours laws etc.) and the normative and cultural expectations that are supposed to influence parents' decisions regarding time allocation to work, childcare and leisure.

If partners in a dual-earner couple communicate with each other about their work schedules, it is likely that this process influences the actual timing of paid work of one or both of the partners. If changes occur, we shall regard the process leading to these changes as an instance of 'active schedule coordination'. Note that we do not refer to all sources of schedule coordination, as clearly there are others in our society, including common time frames (e.g. 'normal working hours'), demands from employers and other factors like social mechanisms of mating.

We focus on the effect of active schedule coordination on working time overlap (WTO), which may vary in size as a consequence of parents' strategies in different contexts. We shall clarify this matter by elaborating some examples that illustrate the mechanisms leading to different decisions in different contexts. Let us take the case of Italy: in this country care facilities are not widely available and additionally the labour market does not allow easily for the accommodation of care responsibilities (Del Boca, 1998, 2002) because part-time work is not often an option and generally working hours are long. Consequently, it may well be the case that Italian mothers enter the labour market only after having sorted the care question, that is when they can rely on help from relatives or can afford paid childcare services. Under these conditions (long work hours and need of childcare more or less already met) the time left for joint leisure become really scarce and hence Italian dual-earner parents may find it "rational" to synchronize their working time as much as possible, more than already allowed by society's common time frames.

Under different circumstances outcomes can be very different. Let us take the case of the Netherlands. Here the labour market offers many part-time jobs, especially to mothers. Working hours are organized

around care responsibilities, because there is a relative lack of care facilities and good parenting is believed to include a substantial element of parental care (Allewijn-Tzipris and Kroneman, 2007). Under these conditions maximizing the time at least one of the parents is able to take care of the children (which is possible, especially when the mother or the father works part-time, usually the former), seems a good strategy that allows to save money, to meet cultural expectations and that doesn't cut back joint leisure too much (since working hours are shorter).

To sum up, we try to find evidence of parents' purposive effort towards coordinating their work schedules in such a way that is consistent with some rational behaviour under given constraints. As will become clearer in the next paragraphs, our methodology allows to rule out a class of plausible mechanisms that could increase or decrease observed work time overlap: selection into jobs (individuals with similar characteristic have similar jobs and hence a pre-determined level of work time overlap) and selection into marriage or marital homogamy (individuals with similar characteristic are more likely to meet, to become a couple and hence to have a pre-determined level of work time overlap). Moreover we assume that the often cited, in family and housework literature, "bargaining process" (see Lundberg and Pollak, 1996 for an overview) does not play a relevant role here. Indeed bargaining or partners' relative resources can determine spouses' level of involvement in the labour market, leading women with less economic power to choose part-time jobs (when available) or to work less, putting down career aspirations. In this article we assume that, because work schedule coordination comes after the choice of labour supply, most of the bargaining has already had its effect and does not influence what is at stake here, that is active working time coordination. We acknowledge, however, that this is a simplifying assumption.^{vi}

Yet, obtaining an empirical estimate of active schedule coordination is difficult. Ideally, we should have two representative random samples, say sample I and II, where in sample I spouses cannot determine the schedule of their paid working hours, while in sample II they can. An estimate that measures active coordination can be obtained by comparing the overlap in paid working hours between the two samples. Intuitively, working time coordination is then measured by the change in WTO as a result of interaction between the parents. Given this setting, it would furthermore be possible to examine how this measure varies over different household types.

In practice, we do not observe a control group of spouses for whom the possibility of active schedule coordination is ruled out. The data only provide information on spouses who may be coordinating their working hours. This problem relates to the potential outcome model^{vii}, according to which there are two possible outcomes for each household. The first outcome corresponds to a situation where spouses are able to coordinate their paid working hours, while the second relates to a situation where spouses cannot. For household i it implies that the effect of work timing on the overlap in paid working hours equals:

$$\Delta_i = WTO_{1i} - WTO_{0i} \quad (1)$$

where the subscript (1) indicates whether there was interaction between the parents (1) or not (0). However, since we never observe both outcomes at the same time, we do not observe the

timing of paid working hours directly.^{viii} Moreover, we always observe the outcome where parents interact to a certain extent (WTO_{1i}), but never the outcome where interaction between parents is ruled out (WTO_{0i}). In order to obtain an estimate that measures active schedule coordination, we therefore construct a control group based on a methodology developed in Van Klaveren and Maassen van den Brink (2007).

Simulating a control group: nearest-neighbour matching

Below, we explain in three steps how a control couple is generated for a particular household (say household i in a sample of N households). In the first step, we match household i to another household in the sample, based on a set of characteristics (X) that are thought to be relevant predictors of the amount of working time overlap (see below):

- the years of formal education;
- a dummy variable that indicates whether each parent works in the weekend;
- the number of working days;
- the usual weekly job hours;
- a dummy variable that indicates whether each parent can work flexibly;
- the number of children present in the household who are aged between 0 and 12,
- a dummy that indicates whether there are children aged between 0 and 3 in the household.

With exception of the child variables, we use information of each parent in the matching process.

When the number of characteristics that we use in the matching process increases, it is less likely that we find an exact match (i.e. households with exactly the same values on all the characteristics).^{ix} Therefore, we define a distance measure whereby we are able to match household i to the best look-alike household in the sample (i.e. the nearest neighbour). We refer to the household that is matched to household i as the 'matched couple'. We selected Mahalanobis distance (Rubin, 1980) as a measure, which allows us to minimize the distance between the households, thereby correcting for the statistical variation in the X -variables.^x In comparison with propensity score matching, we value the non-parametric approach of Mahalanobis matching, because it does not rely on any functional form or distribution^{xi}; it relies only on the covariance matrix observed in the dataset.

In step two, household i and the matched couple switch partners, yielding two imaginary couples made of partners coming from household i and a household that is very similar to it. Finally, in step three, we calculate the overlap in paid working hours of both imaginary couples and obtain the average of both

amounts of overlap. The latter result is considered to be the overlap in working hours of the control group. Consequently, the control group is a collection of imaginary couples with similar characteristics as the observed households. For the imaginary couples, active schedule coordination is ruled out by construction, because no communication has taken place between the imaginary partners. The overlap in work hours between the partners of the control group is therefore not the result of coordination intention of the partners in the sample, and hence should be attributed to other sources of schedule coordination as described above.

Let us define an indicator variable, D , that is equal to 1 when interaction is possible and to 0 otherwise. The degree of active schedule coordination, conditional on whether there is interaction or not, can now be expressed as Δ :

$$\Delta = E(WTO_1 | X, D = 1) - E(WTO_0^c | X, D = 0) \quad (2)$$

where subscript i is ignored since, at this point, we are interested in the expectations. Superscript c refers to the control group and X stands for the characteristics that are used in the matching process. If we compare with equation (1), it is easily seen that $E(WTO_0^c | X, D = 0)$ is the approximation of $E(WTO_0 | X, D = 0)$.

There are certain statistical conditions that must be satisfied in order to have an unbiased estimate of Δ : unconfoundedness or ignorability, conditional mean independence and common support (see Rubin, 1978; Wooldridge, 2001; Imbens, 2004; Cameron and Trivedi, 2005). We assumed that our estimate of (2) satisfies the necessary conditions. The matching procedure will show us whether there is evidence for active schedule coordination or not.

Moreover, it will be possible to examine how the variation in Δ depends on certain characteristics. For example, it may be the case that parents who have more children are found to have less overlap in working hours (negative Δ) compared to the control group, since these parents may want to avoid childcare costs. On the other hand, it may be the case that parents have a preference for spending quality time together with their child and partner, so that we may also observe a positive Δ . In this case, a positive overlap potentially yields parents more joint leisure time.

Application of the matching procedure

In the following sections, we consider the empirical procedure. We start with a discussion of descriptive statistics regarding WTO and inquire about potential determinants of working time overlap in a standard linear regression. Finally, we match households according to the procedure described above.

Descriptive Statistics

Table 1 compares the WTO between parents separately for the three samples, measuring it on a weekly basis. In Flanders and Italy, an average couple of dual-earner parents spends about 20 hours a week on simultaneous paid work. The average in the Netherlands is much lower, which may not be surprising given the prevalence of part-time work among Dutch mothers, as is also shown in

Table 2.

Table 1 Descriptive information on the observed working time overlap (*WTO*) among parents (in hours a week)

	Flanders	Italy	the Netherlands
Mean overlap	20.99	22.42	15.90
Standard error	0.58	0.30	0.42
Median overlap	20.00	21.00	16.42
First quartile (25%)	12.00	14.00	7.50
Third quartile (75%)	29.50	30.25	23.50
N observations	475	1809	682

Results are weighted to correct for selective non-response

Table 2 provides selected descriptive information on the parents in the three datasets used in this article. Apart from the previously mentioned prevalence of part-time work among Dutch mothers, we also note that dual-earner couples in Italy work comparatively long hours and many days. The latter is not a new finding either, as previous analyses of female labour supply in Italy (e.g. Aaberge, Colombino and Ström, 1999; Del Boca 1998, 2002) have shown the Italian labour market not to be very accommodating to care responsibilities, in the sense that part-time jobs are not widely available, so that the market selects primarily women (and men) who are prepared to accept full-time jobs.

Table 2 Descriptive information on parents and their households in Italy, the Netherlands and Flanders (couples, dual earners)

	Flanders		Italy		the Netherlands	
	Mean	SD	Mean	SD	Mean	SD
Men						
Years of formal education	12.87	3.16	11.43	3.40	12.83	2.27
Work on weekends (0/1)	0.15	0.36	0.40	0.49	0.18	0.38
Number of working days	4.86	1.11	5.43	0.63	4.89	0.69
Usual weekly job hours	43.00	11.29	44.14	10.80	41.41	8.43
Can work flexibly (0/1)	0.69	0.50	0.53	0.50	0.62	0.48
Women						
Years of education	13.22	2.75	12.05	3.14	12.93	2.13
Work on weekends (0/1)	0.15	0.36	0.36	0.48	0.20	0.40
Number of working days	4.28	1.25	5.19	0.79	3.34	1.21
Usual weekly job hours	31.41	11.07	33.14	11.42	21.16	8.78
Can work flexibly (0/1)	0.53	0.50	0.45	0.50	0.56	0.50
Household						
Presence of children aged 0 – 3 (0/1)	0.43	0.50	0.39	0.49	0.43	0.50
Number of children aged 0-12	1.67	0.76	1.41	0.58	1.71	0.68
N	475		1809		682	

Results are weighted to correct for selective non-response

Furthermore, we observe in

Table 2 that the degree of schedule flexibility indicated by employees is lower in Italy than in either Flanders or the Netherlands, although in all samples more than half of the male employees indicate that they were able to vary their work schedules to some extent. A similar conclusion imposes itself for female employees, although worker flexibility seems generally less prevalent among women than among men. Working during weekends, on the other hand, is much more common in Italy than in the Netherlands and Flanders. Overall, these descriptive data suggest that the Italian labour market is relatively more

demanding on parents than the Dutch and Flemish labour markets are, because Italian parents tend to work more hours, while they have less say in setting their work schedules and are widely expected to work on weekends. Finally,

Table 2 also provides some information regarding the composition of the family. In this respect, we observe few differences between the samples. About 40% of the couples have one or more pre-school children. The total number of children (aged 0 to 12) is lower in Italy than in Flanders or in the Netherlands as a consequence of a well-known lower fertility rate in Italy than in other European countries.

Exploration of working time overlap among real couples

To gain insight in the potential determinants of WTO, we ran multiple regressions with the predictors listed in

Table 2. They have been chosen on the grounds that they were a) correlated with WTO, b) available in each dataset and c) relevant to the timing issue. About the latter point, when we want to explain the observed working time overlap, we have to take into account dimensions of the work schedule, like the number of working days and the usual weekly job hours. Working more days and/or more hours simply raises the potential amount of working hours that can overlap.

Furthermore, we included indicators that potentially relate to active steering of the working time overlap. If parents are truly interested in a maximum amount of working time overlap (to gain joint leisure time: Hallberg, 2003 and Hamermesch, 2002), they are likely to use their potential of flexibility to this end. On the other hand, if maximal availability to children drives their scheduling efforts (Lesnard, 2005), then the age and the number of children may be important, because pre-school children and a larger number of children require more care time.

Finally, we incorporate the years of formal education as a predictor, because we assume that education is related to timing in several ways. Firstly, the educational level is known to relate to preferences regarding the work-life balance. Highly educated men are often found to be involved in childcare and household chores to a larger extent than other men (Ghysels, 2004) and, hence, we can expect households with highly educated fathers to create less work time overlap. Secondly, highly skilled parents are likely to have higher wages which makes it easier to rely on paid childcare. This reasoning runs counter the former and would entail a synchronization effect among highly skilled. Indeed, with childcare worries sorted, highly skilled spouses can more easily steer their work schedules towards joint leisure. Consequently, we propose alternative hypotheses regarding the influence of the educational level on working time overlap, on which the empirical investigation can shed light in case one of both is clearly prevailing.

We report on regression results in Table 3. Overall, the predictive power of the regressions is satisfactory (adjusted R^2 of 0.41 to 0.55). Generally, estimates are not surprising. The number of working days, for

example, is positively linked to the amount of working time overlap, both for men and women. Of course, the more days either the male or the female partner works in paid employment, the more time the two partners spend in the labour market simultaneously. Interestingly, in Italy, the estimated impact is much smaller and not even significant in the case of men. The latter is likely to be a multicollinearity effect with the close correlate of the number of working days: the usual weekly working hours. Not surprisingly, Italian men have a relatively high estimated coefficient on their observed number of working hours, which may in part replace the working days effect. In general, we observe a similar trend in all three countries: the longer the working time of (one or both) parents, in terms of either days or hours, the greater their working time overlap. By contrast, if one or both parents work weekends, this generally seems to have a negative effect whereby working time overlap is reduced. Furthermore, the impact of educational attainment level and the availability of worker flexibility is unclear and mostly not significant. The latter may be the effect of the two countervailing effects of educational attainment we mentioned earlier. A further exploration of the social mechanisms behind it are left for future work.

Table 3 WTO estimates for Flemish, Italian and Dutch parents with children

	Flanders		Italy		The Netherlands	
	B	SE	B	SE	B	SE
Men						
Years of education	0.44 **	0.15	0.05	0.08	0.11	0.14
No. of working days	3.46 **	0.39	0.06	0.51	4.38 **	0.70
Work on weekends	-5.17 **	1.27	-0.67	0.60	-8.32 **	1.16
Usual weekly job hours	0.17 **	0.04	0.30 **	0.03	0.16 **	0.05
Can work flexibly	1.81 *	0.86	1.08 *	0.49	1.14 *	0.64
Women						
Years of education	-0.15	0.16	0.13	0.09	0.31 *	0.16
No. of working days	2.47 **	0.34	0.86 *	0.38	1.45 **	0.51
Work on weekends	-2.92 *	1.19	-2.80 **	0.56	-8.28 **	0.82
Usual weekly job hours	0.46 **	0.04	0.59 **	0.02	0.62 **	0.08
Can work flexibly	1.78 *	0.81	0.65	0.48	-0.22	0.59
Household						
Children aged 0 – 3	-0.46	1.03	-1.32 **	0.49	-0.26	0.57

No. of children aged 0-12	-0.28	0.53	0.06	0.41	-1.29 **	0.46
Constant	-32.68 **	3.44	- 16.67 **	2.94	-30.50 **	3.97
<i>Adjusted R²</i>	<i>0.53</i>		<i>0.41</i>		<i>0.49</i>	
N	468		1809		682	

The dependent variable is the WTO (hours/week). The samples consist of dual-earner couples with children aged 0-12.

*Levels of significance ** <0.01 * <0.05*

Finally, we observe in Table 3 that among the Dutch, Flemish and Italian parents in our samples, the number of children and the presence of preschool children have different effects in different countries. In Italy the number has not effects, but the presence of very young children negatively influences the working time overlap. On the contrary in the Netherlands having preschool children has not significant effects whereas the number of children is negatively correlated to work time overlap. In Flanders neither the number nor the age of the children seem to relate to the amount of working time overlap.^{xii} Obviously, this does not mean that having children as such is insignificant for the working time overlap, but given our sample of working parents only, we are not able to test this broader hypothesis.

Matching real couples with their nearest neighbours

With the result of the preceding regressions in mind, we subsequently engaged in the matching procedure described above, using all variables mentioned in the previous tables as matching variables^{xiii}. To assess the quality of the resulting matches, we tested whether there are significant differences between the observed couples in our samples and the matched couples. To this end, we first compare the observed working time overlap and the working time overlap of the matched couples, and conclude on this basis that they match almost perfectly. In other words, the difference is not significantly different from zero. Second, we run a multiple regression on the matched couples similar to that one in Table 3 and subsequently compare the parameter estimates obtained for respectively the real couples and the matched couples. Again, we find no statistically significant differences. Not one of the parameter estimates of the regression on the matched couples shows a difference with the real couples (results not shown, available upon requests from authors). With this being true for all three samples, we trust to have obtained a robust matching result.

Empirical findings on active coordination

The question that is central to this article, however, is not whether or not there is working time overlap between parents; it is rather whether this working time overlap is more than an uncontrolled outcome, occasioned by the prevailing rhythm in our society. We are, in other words, interested in whether partners

actively organize their work schedules in a way that produces more *WTO* than would otherwise be the case. We continue with the procedure previously described and compare the observed *WTO* of couples with that of the control group. Since there can be no communication within the imaginary couples of the control group, we rule out active schedule coordination among the control group couples and obtain a measure of working time overlap without schedule coordination on the part of the partners involved.

Empirical evidence of time coordination: T-test

Subsequently, we compare the amount of *WTO* between the spouses and the control group couples. If the observed working time overlap is statistically different from the working time overlap in the control group couples, this is indicative of active schedule coordination, in the sense that the working time overlap is not just determined by common rhythms in society, nor by couples' characteristics but is an outcome of purposive strategy. We emphasize that what is relevant here is the difference with respect to the control couples which provides an indication of the size and the direction of parents' coordinating effort.

Table 4 confirms our hypothesis and reveals significant differences between the observed couples and the couples in the control group. This indicates that partners actively coordinate their working times. However, the sense of active schedule coordination is not the same in all three samples.

Table 4 T-test of the existence of active time coordination

	Flanders	Italy	the Netherlands
Observed <i>WTO</i> (mean)	21.01	22.47	15.90
Control group <i>WTO</i> (mean)	20.19	20.11	16.83
Avg. surplus of active coordination (hours/week)	0.82	2.36	-0.93
Value of the T-statistics	1.78	11.44	-4.15
Level of significance	<0.04	<0.01	<0.01
<i>95% confidence interval:</i>			
Lower bound	-0.09	1.96	-1.373
Upper bound	1.73	2.77	-0.490
<i>The distribution of active coordination</i>			
First quartile (25%)	-5.38	-3.13	-4.00

In Flanders and Italy, parents are found to create more overlap in their work times. An explanation for this result is that these parents coordinate their schedules in a way that they obtain more joint leisure time. This result has previously been observed in general population samples (Hallberg, 2003; Jenkins and Osberg, 2005; Van Klaveren and Maassen van den Brink, 2007). Yet, in the sample of Dutch parents, we obtain the reverse result. Dutch parents' active coordination runs in the opposite direction. They tend to reduce the overlap in working time.

A link to the national contexts may clarify these seemingly contradictory results. As previously mentioned, in the Netherlands many mothers work, but work is accommodated around the care responsibility. There is a relative lack of care facilities, while good parenting is generally assumed to include a substantial element of parental care (Allewijn-Tzipris and Kroneman, 2007). In Italy, the availability of care facilities is a strong determinant of mothers' labour supply, in part because the labour market does not allow for the accommodation of care responsibilities to the same extent as in the Netherlands (Del Boca, 1998 and 2002). Part-time work, for example, is often not an option. In Flanders, finally, working mothers can rely on a relatively wide offering of care facilities (Eurostat, 2004). Concluding, our results seem to allow the following interpretation: dual-earner parents in Flanders and Italy can afford to create more work time overlap, i.e. to coordinate towards more joint leisure, because they have sorted the care for their children, while in the Netherlands most dual-earner parents create less work time overlap, i.e. they coordinate away from joint leisure, because they prioritise care time rather than joint leisure time.

However, although we found evidence for active work time coordination, the effect is rather small. Comparing averages, the active coordination part stands for between 4 and 11% of the working time overlap (in Flanders and Italy, respectively). Moreover, the bottom pane of table 4 shows that while some parents decide to create more work time overlap, others decide to create less work time overlap. Consequently these decisions' effects may partially cancel each other out and the average outcome is a small amount of active coordination.

Looking into specific categories of couples

The above findings confirm that couples tend to coordinate their work schedules actively. In addition to differences observed between the samples, the sense and degree of coordination may also vary within each of the samples, e.g. depending on certain household characteristics. Therefore, we examine the WTO of specific categories of couples to assess who is more able to coordinate and in which direction the active coordination runs. In this part of the analysis, we apply a kind of difference-in-differences estimation strategy (Cameron and Trivedi, 2005). In practice, we estimated multiple (OLS) regressions of WTO for real couples and control couples (imaginary couples), using as predictors the same variables as in the matching

procedure^{xiv}. After regression, we selected specific “couple profiles” and computed their predicted working time overlap holding the other variables constant at sample means. In Table 5, we do not show all these predicted outcomes, but rather take an analytical shortcut. We show the parameter estimates of the underlying regressions and perform significance tests on the difference between these estimates. If they differ significantly, they indicate immediately what is of interest to us: whether the variable at hand has a different impact on the observed working time overlap than on the simulated working time overlap and in which direction the difference runs. As far as Italy is concerned, most characteristics do not alter the general result of parental working time synchronization. Having older or younger children, working on weekends or not, being flexible or not; all these variables make little difference: in comparison with the control couples, real couples on average have a surplus in WTO. However, it emerges that, in Italy, coordination of work schedules is positively associated with men’s educational level. The higher educated the man is, the more the couple tends to synchronize, meaning that education could be linked to preference or possibility for joint leisure. In the Netherlands and Flanders, the presence of young children is significant, and the effect is relatively large in the sense that it results in a greater de-synchronization effort.

However the latter results on the effects of education and presence of young children should be taken with caution because the difference between coefficients is significant, while the coefficients themselves are not.

Table 5 Unweighted Diff-in-diff results between Real (R) and Control (C) couples

	Flanders			Italy			Netherlands		
	R	C	Δ	R	C	Δ	R	C	Δ
Men									
Years of education	0.44	0.55	-0.11	0.05	-0.10	0.15 *	0.11	0.20	-0.09
No. of working days	3.46	1.80	1.66 **	0.06	0.30	-0.25	4.38	2.62	1.77
Work on weekends	-5.17	-6.01	0.83	-0.67	-1.31	0.64	-8.32	-7.29	-1.02
Usual weekly job hours	0.17	0.14	0.03	0.30	0.20	0.11 **	0.16	0.12	0.04 **
Can work flexibly	1.81	0.53	1.28	1.08	0.83	0.25	1.14	1.19	-0.05
Women									
Years of education	-0.15	-0.20	0.06	0.13	0.21	-0.07	0.31	0.34	-0.03
No. of working days	2.47	1.56	0.90 **	0.86	1.06	-0.20	1.45	1.60	-0.15
Work on weekends	-2.92	-2.84	-0.08	-2.80	-3.50	0.70	-8.28	-9.19	0.92
Usual weekly job hours	0.46	0.17	0.29 **	0.59	0.40	0.19 **	0.62	0.49	0.13 **
Can work flexibly	1.78	1.09	0.68	0.65	0.09	0.56	-0.22	0.01	-0.23

Household									
Children aged 0 – 3	-0.46	1.62	-2.08 *	-1.32	-1.07	-0.25	-0.26	0.53	-0.79 **
No. of children aged 0-12	-0.28	-0.47	0.20	0.06	-0.10	0.16	-1.29	-0.92	-0.38
Constant	-32.68	-11.60	-21.08	-16.67	-8.44	-8.22	-30.50	-19.86	-10.65
N	468			1809			682		

*The dependent variable is the WTO (hours/week). The samples consist of dual-earner couples.
Levels of significance ** > 99% * > 90%*

Across the three samples, however, the most important variation in synchronization stems from the working schedule of the fathers and mothers, particularly the number of hours worked. To clarify this matter, we show in Table 6 the simulated impact of the number of working hours on the degree of active schedule coordination. The effect of changes in working time on the actual sample is simulated using the parameter estimates of Table 5 and holding all variables constant, with the exception of working hours of mothers and fathers. For the purpose of the simulation, we selected a few relatively realistic combinations of working times, varying from a couple that is highly active in the labour market in terms of working hours, to some of the asymmetrical arrangements that are commonly encountered in the Dutch population, to a couple that is a relatively modestly involved in the labour market. A first interesting observation derives from the comparison of similar changes in male and female working hours from 40 to 36 hours a week. This suggests that women's working hours influence the degree of active coordination to a larger extent than men's do (see also Table 5).

Table 6 The effect of working hours: a simulation. Predicted difference in WTO (real-control couples, R-C) and predicted WTO (real couples, R)

Work hours		Italy		Flanders		the Netherlands	
Man	Woman	R-C	R	R-C	R	R-C	R
50	40	4.25	28.1	3.4	25.8	1.9	29.0
40	40	3.19	25.1	3.1	24.1	1.5	27.4
36	40	2.76	23.9	3.0	23.4	1.4	26.8
40	36	2.42	22.7	1.9	22.3	1.0	24.9
36	36	2.0	21.5	1.8	21.6	0.8	24.3
40	30	1.27	19.2	0.1	19.5	0.2	21.2

40	20	-0.65	13.3	-2.8	14.9	-1.1	15.0
Country averages							
44.1	33.4	2.36	22.5				
43.0	31.4			0.6	20.7		
41.41	21.16					-0.9	15.9

Indeed, a four-hour decrease in male working time has a smaller effect on the predicted WTO than a similar decrease in female working time. These results are in line with gender theory, according to which couples abide to dominant time allocation norms inducing men to take the lead in the labour market and women to follow. Apparently, male chauvinism also manifests itself in couples' time coordination.

Second, the variation in working hours shows that the synchronization of work schedules previously found for Flanders and Italy reverts to de-synchronization among couples where the female partner has a half-time job. For the Netherlands, we observe that the average working hours of women are approximately the same as in situations where the female partner works half-time, and revert to synchronization with rising working hours of the mother. In other words, the observed trends are more similar across countries than one would conclude from Table 4 and they seem to be driven to a large extent by the difference in average working hours of women. As an explanation for the reverting trend in all three countries, it seems likely that the part-time job of the mother enables households to organize their work schedules in such a way that use of childcare services can be avoided to a large extent, more than such short working hours already allows, thus motivating households to purposively de-synchronize. On the contrary, long working hours, reducing time available for joint leisure, would constitute reason for actively creating more synchronization. Yet, these assertions require more detailed analyses on the availability of and motives for opting for part-time employment, which we leave for later work.

At the current level of analysis, the table affirms that the number of hours parents work impacts greatly on how they coordinate their respective work schedules. Moreover, it reiterates that, within a country, the dominant coordination trend revealed in the previous tables need not be shared by all parents, as previously discussed.

Discussion and conclusion

In this article, we considered the issue of working time coordination among dual-earner couples with children in Belgium (Region of Flanders), Italy and the Netherlands. More specifically, we analysed the number of hours per week that partners work simultaneously, i.e. the extent of working time overlap. Obviously, working time overlap between partners stems largely from determinants that are beyond their control, e.g. the standard 9-to-5 working day, which inevitably results in a substantial WTO between most people.

However, our analysis also reveals that, in all three countries studied, part of the WTO between mothers and fathers is occasioned by active coordination on the part of the parents, adding a factor that is not specific to any particular kind of couple. In other words, there is evidence that parents actively adjust their working day to their partners'.

Yet, the direction of this adjustment varies across countries and between couples. Across countries, we find that, on average, Italian and Flemish dual-earner parents *synchronize* (i.e. they increase their working time overlap), while Dutch parents *de-synchronize* (i.e. they decrease their working time overlap). In other words, the former seem to want to maximize the amount of time away from work (*non-market time*) which they can spend together, while the latter seem to want to maximize the time at least one parent is away from work. As a potential explanation for these broad trends, we hypothesize that country-specific work and care arrangements may play a part.

In this article, we were not able to test these explanations for our main findings directly and we leave further explorations for future work. Yet, our simulation does offer supporting evidence. We simulated WTO due to active coordination among couples with different working hours, holding all other variables constant. Interestingly, we found very similar results across the three societies. Dual-earner couples with both partners in full-time jobs are likely to synchronize their working time, while couples where a spouse is working part-time are likely to de-synchronize. We therefore propose that future analyses try to shed light on the influence of working-hour flexibility and the availability of childcare services on working time decisions of parents. For now, we conclude that parents coordinate their working time, but that the sense and direction of this coordination depends largely on their circumstances.

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Acknowledgments

This article is the result of a research conducted within the Equalsoc Network of Excellence (www.equalsoc.org), FAMNET research group. Authors are grateful to the Network for funding this opportunity.

Notes

ⁱ There are at least two reasons why the timing dimension was neglected in past time-use research, even though this was perceived and acknowledged as a problem (see Gershuny and Sullivan 1998). The first is an undeniable lack of statistical tools; the second is related to the absence of theoretical models and its implications for empirical analyses.

ⁱⁱ Lesnard (2005) interestingly remarks that the primary form of solidarity in contemporary family is *mechanical* (following the well-known Durkheimian distinction between mechanical and organic solidarity): family ties depend less on the household division of labour and more on interpersonal relations.

ⁱⁱⁱ However, the figures on flexible arrangements are considerably higher according to managers of a large sample of European enterprises (see European Foundation for the Improvement of Living and Working Conditions, 2006).

^{iv} In fact, the FFCS contains an additional 500 households with disabled children and 500 poor households, but only the general purpose survey (N=1929) is relied upon in this article.

^v These questions were asked specifically for a work timing study by Van Klaveren, Maassen van den Brink and Van Praag (2006).

^{vi} We are aware that the choice concerning the amount and the timing of work could also be made at the same time, but the modelling of such a choice is beyond the scope of this article.

^{vii} See Roy (1951), Rubin (1974, 1976), Holland (1986) and (Splawa)-Neyman (1990).

^{viii} The outcome that is not observed is generally referred to as the counterfactual outcome.

^{ix} This induces a bias in the estimate obtained, because it is less likely that a match will occur for households with characteristics that are less likely. Hence, the estimate obtained shows a regression towards the mean.

^x More formally, we have a match $W(i, j) = 1$ if $j = \arg \min_{j=1, \dots, N} (X_i - X_j)' \Sigma^{-1} (X_i - X_j)$. Hence a couple is regarded as the nearest neighbour if the distance between two households, say i and j , is minimized given that we correct for the statistical variation in X as defined by the covariance matrix Σ .

^{xi} In order to determine the propensity score, one must define a distribution of the error term and hence the match that is obtained is based on parametric analysis.

^{xii} We also tested other specifications of the household composition (the total number of children, the age of the youngest child, the number of children within age cohorts, a dummy representation of having two,

three or more children), but statistically these specifications all yielded the same result: not one of the parameter estimates is significantly different from zero (Flemish dataset).

^{xiii} We do so to comply with the unconfoundedness condition. Of course, we can only select variables that are in our dataset or, more accurately, that are in all three datasets.

^{xiv} Since real couples and matched couples share (almost exactly) the same characteristics, the actual procedure was run twice with the same predictors: once on the observed working time overlap and once on the simulated working time overlap (the average of the working time overlap of both imaginary couples).