Social Inequalities and the Desynchronisation of Sleep Within Couples

Capucine Rauch*

Abstract – In the majority of couples, the partners synchronise their sleep; however, synchrony is not the same across all social classes: the sleep of white-collar and blue-collar couples is the most out of sync. Based on the Time Use Surveys conducted in 1986, 1999 and 2010, we are creating a sleep organisation typology for couples in order to study the factors behind desynchronisation and the ways in which they have changed between the mid-1980s and the late 2000s. Between these two dates, an increase in desynchronisation has been observed in almost all social classes due to an increase in the amount of time spent watching television. However, inequality with regard to working hours remains the principal factor behind the differences in sleep synchronisation. Sleep desynchronisation also reflects gender inequalities in the division of work between couples, with men and women undertaking different activities while their partner is sleeping.

JEL Classification: Z13, J16, J12
Keywords: sleep, time use, social inequalities, gender inequalities

**National Institute for Demographic Studies (Institut National d'Études Démographiques – INED), Sciences Po, CNRS (capucine.rauch@ined.fr)*
Special thanks to Laurent Lesnard and Jeanne Ganault, as well as Nicolas Robette. I would also like to thank the two anonymous reviewers whose comments and suggestions helped to improve this article.
Received in July 2019, accepted in May 2020. Translated from "Inégalités sociales et désynchronisation du sommeil au sein des couples"

Citation: Rauch, C. (2021). Social Inequalities and the Desynchronisation of Sleep Within Couples. *Economie et Statistique / Economics and Statistics*, 522-523, 81–104. https://doi.org/10.24187/ecostat.2021.522d.2040

Since the duration of a day is limited, individuals have to make choices between different activities, choices that depend largely on their preferences and time constraints. As a result, time use differs from one individual to the next. For example, those who are employed and in higher social classes tend to prioritise "active" activities (professional, sporting, club and cultural activities, for example) to the detriment of "passive" activities, such as sleep and television, activities that those who are less well-off or unemployed devote more time to (Degenne *et al.*, 2002). Men are also more likely to view sleep as an "unfortunate necessity" as it takes up time that could be used for other activities, such as work in particular (Degenne *et al.*, 2002; Meadows *et al.*, 2008).

These examples point to the fact that sleep does not have the same position among the preferences of individuals and in the way in which they organise their time. Just like their other activities, individuals organise their sleep. The phrase "to do sleep", which is used as a verb by certain English-speaking researchers, reflects the fact that sleep is not a state that is simply experienced, but a behaviour loaded with social significance (Taylor, 1993), which is shaped by individuals' bodily *habitus* and *hexis* (Williams, 2002). In *Les techniques du corps*, Mauss shows early awareness of this by highlighting that sleep is a cultural phenomenon that can be learned (Mauss, 1936) and that falling asleep is the result of a cultural process that is taught from childhood (Aubert & White, 1959a; 1959b). Within a community, sleep coordination is a condition that allows for the organisation of community living. Individuals sleep at the same time because they need one another when they are awake (Schwartz, 1970). Sleep and its social organisation are prerequisites for the functioning of a society (Williams, 2002), and public health issues, as highlighted in a recent report by the Terra Nova Foundation (Léger *et al.*, 2016). Sleep is therefore not only determined by biological necessities, but also follows norms and values and is a paradigmatic example of the interaction between biological and social processes (Williams, 2002).

Sleep is therefore an organised activity. Biddle & Hamermesh (1990) integrate sleep into an optimal time allocation model and conclude that it can be considered to be in competition with other activities of greater value. This would make it subject to consumer choice and it would be affected by the same economic variables as those that govern other time-based decisions. A qualitative study of employed students and shift workers in the United States also highlights the efforts made by these individuals to negotiate, manage and plan their sleep (Coveney, 2014).

In addition, Chatzitheochari & Arber (2009) provide evidence of inequalities among British workers with regard to the risk of having a low sleep duration, and they describe sleep as a further element that must be taken into account when striking a work-life balance. Furthermore, the latter is inseparable from the study of the division of work within couples and the associated gender inequalities. International comparisons show that the gender gap in sleep time is not consistent across societies.[1] A study based on the US time use survey highlights that, regardless of their position in the life cycle, American women sleep longer than men (Burgard & Ailshire, 2013), whereas in South Korea, the average woman spends less time sleeping than her male counterparts (Fisher & Robinson, 2010). For the most part, these differences can be explained by disparities in professional and family responsibilities, as well as in time use.[2] Sociocultural characteristics must therefore be taken into account when analysing sleep habits, as they are likely to have different effects on men and women (Cha & Eun, 2014). A European comparison (Maume *et al.*, 2018) also suggests that gender inequalities are linked to non-restorative sleep and that women and men sleep better on average in countries with greater gender equality. The duration and quality of sleep would therefore be unequal between men and women, which would contribute to reinforcing gender inequalities.

Nevertheless, aside from the small number of qualitative studies,[3] analyses linking time use and sleep inequalities between men and women are mainly carried out at the individual level. Ricroch (2012) presents an initial analysis of sleep synchronisation within couples on the basis of the French Time Use Survey (Insee), but applies a typology of nights (22:00-08:00) on an individual basis before combining the classes to which both partners belong. However, this level of analysis only partially captures the potential differences in the influence of family and professional responsibilities on

1. See, for example, Fisher & Robinson, 2010; Robinson & Michelson, 2010.
2. See in particular Cha & Eun, 2014; 2018; Hislop & Arber, 2003; Maume et al.*, 2018; Maume* et al.*, 2009; 2010; Venn* et al.*, 2008.*
3. In particular, Hislop & Arber, 2003; Maume et al.*, 2009; Venn* et al.*, 2008.*

men and women. Indeed, this reasoning makes implicit reference to gender inequalities within couples, but it does not allow them to be studied directly because men and women are analysed separately. Reasoning at the level of the couple allows the interactions between partners to be taken directly into account rather than reconstructing them *a posteriori*. In their conclusion, Maume *et al.* (2018) therefore highlight the need for quantitative research at the level of the couple in order to study the way in which professional and family obligations impact on the ability of partners to enjoy restorative sleep when they need it.

In addition, Méda (2001) notes that, with the traditional division of labour, in the case of couples where only the man is working, the woman plays the role of a "time reservoir", taking charge of coordinating the different social times. With the increase in the number of couples in which both partners work, this specialisation is disappearing. Within such couples, the synchronisation of the partners' time needs to take account of not one, but two professional constraints. Lesnard (2008) points out that the desynchronisation of working hours, a phenomenon that is strongly linked to social status, is affecting more and more couples in which both partners work, and that this lack of synchronisation is to the detriment of family time. Those who have the opportunity to do so more often than not opt for a standard and synchronised working day. So what is the situation when it comes to choosing sleep schedules? Although Ricroch (2012) notes that the more atypical the sleep schedules, the less likely they are to be shared by couples, she does not go further into this analysis.

Studying the organisation of sleep at the couple level therefore allows the associated inequalities to be studied at two levels: within couples by comparing the situation of the two partners, and between couples by studying the regular or atypical nature of the way in which they organise certain aspects of time in order to compare their respective situations. This is what we propose to do by studying sleep synchronisation within couples using the 1985-1986, 1998-1999 and 2009-2010 Time Use Surveys. The article is organised as follows: in the first section, we present the data used and the forms of sleep (de)synchronisation within couples. The second section describes the structuring and desynchronisation of sleep within couples and the third section explores the link between the desynchronisation of sleep and social inequalities.

1. Synchronisation and Desynchronisation of Sleep

1.1. Data and Measurement of Sleep Within Couples

1.1.1. Standardisation of the Time Use Surveys and Coverage

The three most recent French Time Use Surveys conducted by Insee (*Enquête Emploi du temps*, 1985-1986, 1998-1999 and 2009-2010) allow for a detailed analysis of the management of time by individuals and their partners in the case of couples. In fact, respondents are asked to fill in a diary, indicating in their own words all of the activities carried out during the day. By combining the partners' diaries, it is therefore possible to study the way in which couples organise their sleep.

In 1985-1986 and 1998-1999, individuals were only required to fill in one diary, whereas in 2009-2010, they filled in two, one on a weekday and the other on a weekend day (they only filled in one if they were included in a module on money arrangements within couples). This therefore brings about an over-representation of couples' days in the 2009-2010 survey, including the days of couples who are unemployed or in which the two partners are students, couples whose children are employed and living with their parents and couples formed less than a year previously.

In order to correct these skewed distributions, we assign a weighting of 2 to the couples who only filled in a single diary in 2009-2010 and then adjust the weighting of the couples' days from 1985-1986 and 1998-1999 in such a way that each survey is equally represented within the sample.

In 1985-1986, the activities were timed at 5 minute intervals; however, this increased to 10 minutes for the other two surveys. In all cases, the activities are recorded from midnight to midnight (the 2009-2010 survey also took account of activities performed the previous evening between 21:00 and midnight, which we are disregarding). Also, it should be borne in mind that, in the vast majority of cases, the sleep that we are observing relates to two separate nights, from midnight to the time that the person gets out of bed on the first night and then from the time that the person goes to bed to midnight on the second night, possibly with one or more naps in between (of the diaries completed during all three survey years by persons over the age of 15 residing in Metropolitan France, 12%

included one episode of sleep, 52% included two, 25% included three, 8% included four and 3% included at least five). In order to standardise the time use intervals, we duplicated each of the 144 10-minute slots from the 1998-1999 and 2009-2010 surveys in order to artificially obtain 288 5-minute slots.

We are only including cohabiting heterosexual couples where both partners completed a diary on the same day. Homosexual couples are not being taken into account as they only represent a very small part of the sample and we want to be able to study the possible impact of gender on the conjugal organisation of sleep. We are excluding couples who did not complete the individual questionnaire, for whom we do not have any socio-demographic information, as well as those who did not report any episodes of sleep. The final sample is made up of 19,076 couple days: 5,644 from 1985, 4,570 from 1998 and 8,862 from 2009.

1.1.2. Sleep in the Time Use Surveys

To allow the diaries to be compared, the activities described by the respondents are grouped under different options. However, the coding is not consistent across the surveys: sleep is broken down into four options in the 1985-1986 survey, three in the 2009-2010 survey and only one in the 1998-1999 survey. Furthermore, "in accordance with European recommendations, periods of rest (naps, for example) of under 3 hours are coded in the 2010 survey as 'doing nothing'. This activity was previously coded as 'sleep'." (Insee, 2017).

For the sake of consistency, for each survey, we consider the options corresponding to "doing nothing" or "relaxing" to be equivalent to sleep. As a result, the times referred to here as "sleep" do not reflect actual sleep, but the time allocated to sleep (or a similar activity). In addition, although very few individuals explicitly recorded it in their diaries, sleep can also include sexual activity (across all the survey years, only 1.6% of the diaries filled in by persons over the age of 15 residing in Metropolitan France contained at least one episode of "private activities", which is the option that includes sexual activity, among other things).

The following activities are included as sleep:

-1985-1986: nocturnal sleep (essential) including sleep during the day for those who work at night; daytime sleep (accidental, e.g. when a person is unwell); having a lie in, a nap or a rest; relaxing, thinking, making plans, doing nothing, no visible activity; smoking, whistling.

-1998-1999: sleeping; relaxing, reflecting; smoking.

-2009-2010: sleeping; bedridden, unwell; time around sleep (insomnia, lie ins, etc.); doing nothing, strolling, reflecting, smoking, relaxing, resting, etc.

The average duration of these activities among persons over the age of 15 residing in Metropolitan France, as well as the rates of participation and average duration of the activities for the participants can be seen in Table C-1 in the Online appendices (link at the end of the article). An analysis of the 1985 and 1998 surveys adopting a more restrictive definition of sleep confirms the results presented below.

1.1.3. Combining Partners' Diaries in a Couple's Diary

By combining the daily diary filled in by the partners, it is possible to construct time uses at the level of the couple, with each sequence representing the combination of "male/female activity". The analysis takes into account only the main activities, grouped in *sleep* or *other* of each spouse (F and M). Once combined, this gives four modalities at the level of the couple for a given time slot: *couple sleep* (F sleep and M sleep), *M sleep only* (M sleep and F other), *F sleep only* (F sleep and M other), *couple other* (F other and H other).

The synchrony (or synchronisation rate) of sleep is defined as follows:
synchronisation rate=couple sleep/(M sleep only + F sleep only + couple sleep)

1.2. Sleep, a Highly Synchronised Activity?

The organisation of community living requires the coordination of sleep schedules (Schwartz, 1970) and, like meals (de Saint Pol, 2006), sleep is a highly synchronised activity. According to the 2009 Time Use Survey, nine out of every ten individuals are asleep between 01:00 and 06:00. By way of a comparison, if we look only at individuals who worked on the day of the survey, no more than 80% of this population were working simultaneously, and even that only lasted for one hour (between 10:00 and 11:00).

Furthermore, within couples, the partners seek to coordinate their schedules so that they are able to spend time together (Hamermesh, 2002), which results in increased synchronisation of their sleep. Regardless of the year in question, the sleep synchrony of couples is 10 points higher

than that of pseudo-couples – established by randomly pairing a man and a woman[4] (see Online Appendix, Figure C-I). This difference confirms the existence of a trend towards the synchronisation of sleep within couples, as highlighted by Ricroch (2012), a trend that persists throughout the entirety of the period studied. Given the degree of stability of this synchrony, and in order to ensure that we have a large enough headcount to allow for sufficiently detailed analyses, we then aggregated the three surveys.

Sleep synchrony is not the same in all social classes (Table 1): 82% of the sleep by couples made up of two executives[5] is synchronised; this number falls to 73% among couples made up of two blue-collar workers. At first glance, this 10-point difference may appear small, but given the high level of sleep synchronisation among the French population, it is certainly not insignificant; moreover, the difference is the same as that between couples and pseudo-couples.

However, the proportion of discordant sleep between partners does not reveal the true extent of desynchronisation;[6] it needs to be looked at together with the duration of their sleep, which differs depending on their social status.

Homogamous female blue-collar workers sleep an average of 20 minutes longer than homogamous female executives, while homogamous male blue-collar workers sleep an average of 30 minutes longer than homogamous male executives. However, there is no significant difference in the amount of time that the partners spend sleeping together between these two categories of couple. The additional sleep enjoyed by blue-collar workers when compared with executives therefore results mainly in an increase in the time spent by the partners sleeping alone: the desynchronisation of homogamous executives accounts for an average of 1 hour 45 minutes, whereas that of homogamous white-collar workers amounts to an average of 2 hours and 45 minutes, while the figure among homogamous blue-collar workers is 3 hours (Figure I).

However, these static indicators alone, namely the synchrony and duration of the (de)synchronisation of couples, only partially capture sleep management and do not take account of the chronology of the conjugal organisation of sleep. Identical sleep synchrony can mask different ways of organising sleep, resulting from preferences for particular arrangements or limitations, particularly professional, that impact upon the couple's ability to manage their time. Not all couples are equal in terms of time; they have varying degrees of flexibility when it comes to managing their time use depending on the employment status of the partners and the freedom that they have in determining their working hours (Lesnard, 2008). The (de)

4. In the interest of ensuring consistency with the population studied, which is made up entirely of heterosexual couples, the random couples are also exclusively heterosexual.

5. The socio-professional classifications (PCS) of the couples are defined in Appendix 1.

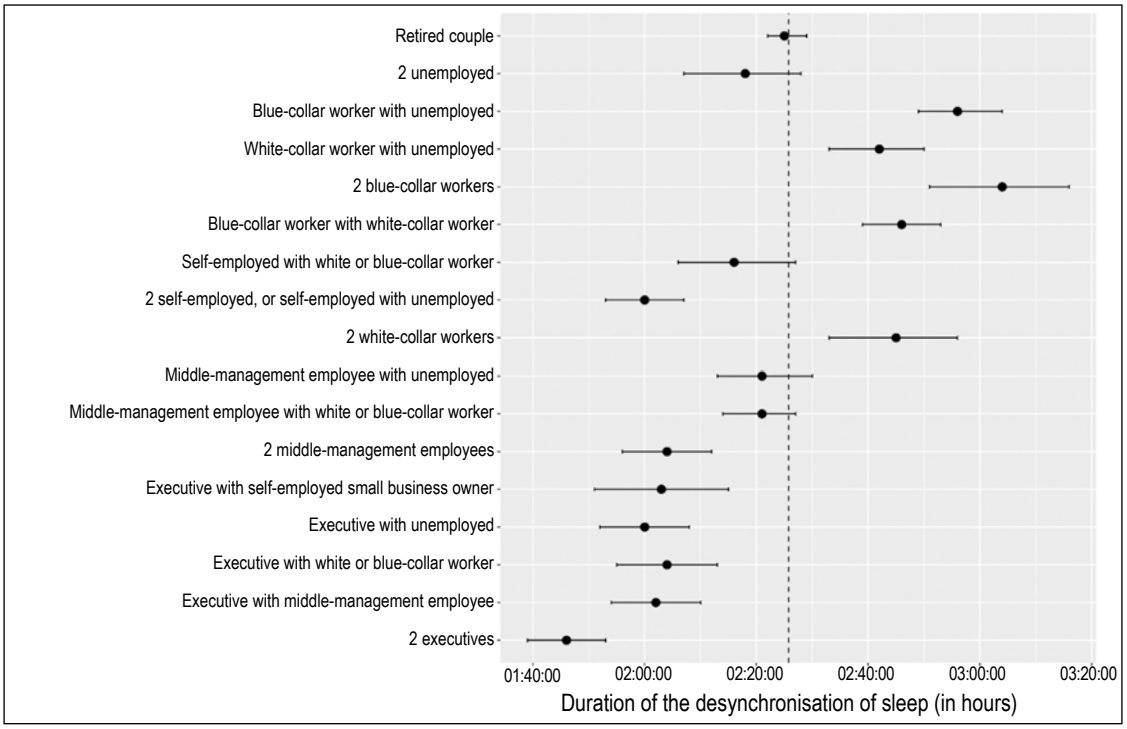
6. In the remainder of the article, unless otherwise specified, (de)synchronisation is used in reference to the (de)synchronisation of sleep in the same way as synchrony refers to sleep synchrony.

Table 1 – **Sleep synchrony by social class of the couple (in %)**

Partners' social category	Synchrony
2 executives	81.9
1 executive and 1 middle-management employee	79.8
1 executive and 1 white or blue-collar worker	79.7
1 executive and 1 unemployed	80.3
1 middle-management employee or executive and 1 self-employed	79.7
2 middle-management employees	80.0
1 middle-management employee and 1 white or blue-collar worker	78.0
1 middle-management employee and 1 unemployed	77.7
2 white-collar workers	74.6
1 self-employed and 1 self-employed or unemployed	80.3
1 self-employed and 1 blue or white-collar worker	79.2
1 blue-collar worker and 1 white-collar worker	74.8
2 blue-collar workers	72.9
1 white-collar worker and 1 unemployed	75.4
1 blue-collar worker and 1 unemployed	74.0
2 unemployed	79.6
2 retired	79.2
Total	78.1

Reading Note: On average, 79.2% of the sleep of retired couples is synchronised.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

Figure I – **Average duration of sleep desynchronisation by couples' social category (PCS)**



Note: The dotted vertical line represents the average duration of desynchronisation across the sample as a whole. The segments represent the 95% confidence interval.
Reading Note: The average duration of desynchronisation for couples combining an executive and an unemployed partner is two hours.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

synchronisation of sleep within couples may therefore reflect these social inequalities.

1.3. A Typology of the (De)synchronisation of Sleep Within Couples

In order to study in more detail the factors behind desynchronisation and how they have changed between the mid-1980s and the late 2000s, we establish a typology for the organisation of sleep within couples by means of a sequence analysis (see Box and Figure II). Three broad types of organisation emerge: synchronised sleep, partially desynchronised sleep and largely desynchronised sleep.

1.3.1. Synchronised sleep

The three most synchronous types of organisation with a sleep synchronisation rate of around 80% are *long synchro nights*, *short synchro nights* and *night owl partners* (Table 2). Synchronised

Box – **Establishment of the Typology of the Temporal Organisation of Sleep Within Couples**

The diaries filled in by couples can be considered as sequences of activities carried out over 288 five-minute periods. By analysing these sequences, it is possible to compare the ways in which different couples use their time (see sub-section 1.1.3.) and then to establish a typology for the organisation of sleep within the couples. The analysis takes place in two stages: first a matrix is defined for the distance between the couples' time uses, then they are grouped into the most homogeneous classes possible.

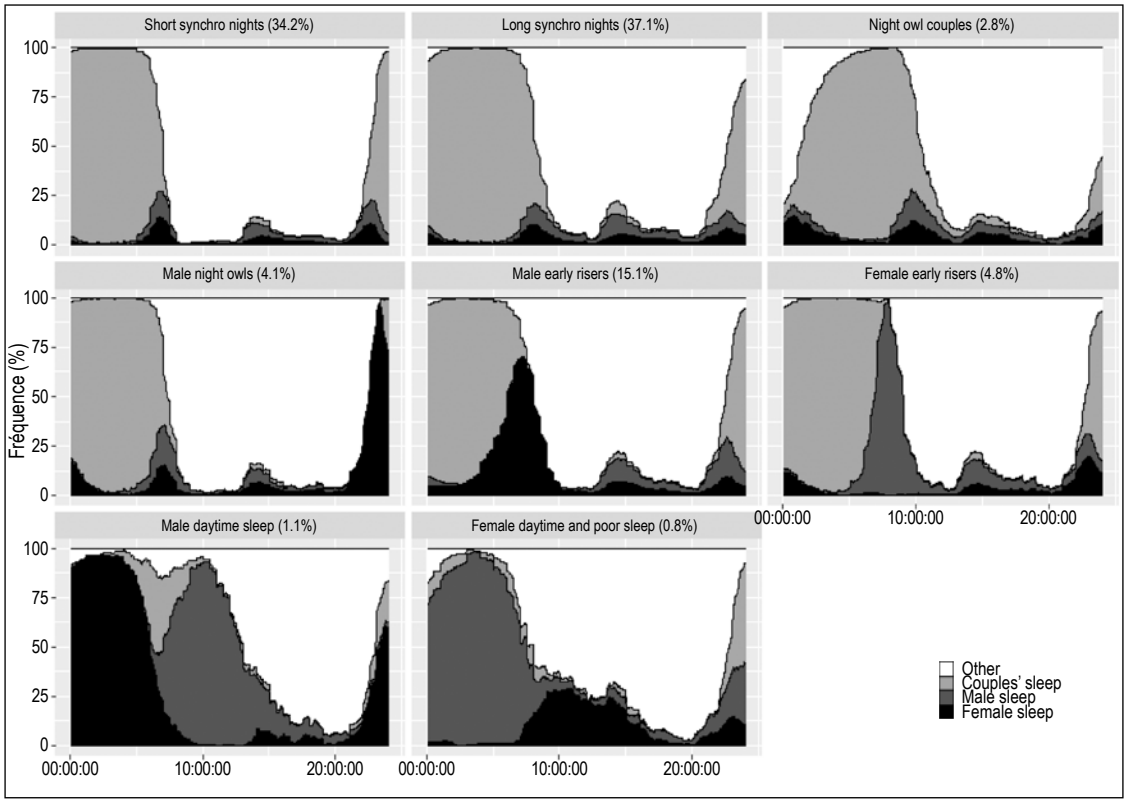
The distance between the time uses is defined using the Dynamic Hamming method (Lesnard, 2010), which allows the temporal structure of the time use to be preserved and takes account of the fact that sleeping rather than doing something else has different consequences depending on the time of day.

We then carry out the classification on the basis of the distance matrix obtained using the PAM (Partition Around Medoids) method. This method allows for the identification of *k* medoids and then the assignment of each observation to the nearest medoid. The aim is to find the *k* medoids that minimise the distance between the observations and these medoids.

Having defined 15 classes using the PAM algorithm, we make the relevant groupings manually, using the chronograms for each class and the time uses of the medoids, comparing their structure. This results in 8 classes [(a)].

[(a)] The initial typology in 15 classes and the correspondence table are provided in the Online Appendix (Figures C-II and C-III and Table C2-2). A typology of activities carried out over a 24-hour period from 21:00 to 21:00 on the basis of the 2009 survey produced very similar results.

Figure II – **Typology of the organisation of sleep within couples**



Reading Note: Among couples that include a *male early riser*, at 08:30, the female is sleeping alone in 30% of couples.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010;19,076 heterosexual couples, Metropolitan France.

sleep accounts for three quarters of couple days (Table 3). Half of the individuals belonging to the *long synchro nights* and *short synchro nights* are in bed by 22:40 (Table 4).[7] The difference between these two groups are the times that they wake up: the median rising time for persons in the *short synchro nights* group is 06:50, whereas half of those in the *long synchro nights* group are still asleep at 08:00. Naps are also more common within the *long synchro nights* group. The *night owl partners* are also highly synchronised, but are up later than the previous groups. The result of this high level of synchrony is that the amount of time spent sleeping is almost identical for both partners.

1.3.2. Partially Desynchronised Sleep

Couples made up of *female early risers*, *male early risers* and *male night owls* represent a quarter of the sample. Around two-thirds of couples' sleep is synchronised in this case. In couples with a *female early riser*, the median bedtime of both men and women is identical. However, the median rising time for women is two hours earlier than for men (06:50 *vs.* 09:00). The median difference in sleep time between the partners is two hours in favour of men.

7. The difference when compared with the median bedtime of "short-night" women is not significant.

Table 2 – **Characteristics of sleep by type of organisation**

	Duration of sleep (in hours)		Duration of desynchronisation (in hours)	Synchrony (%)
	Women	Men		
Long synchro nights	9 hours 44 minutes	9 hours 56 minutes	1 hour 53 minutes	83.9
Short synchro nights	8 hours 12 minutes	8 hours 20 minutes	1 hour 31 minutes	84.2
Night owl partners	9 hours 16 minutes	9 hours 8 minutes	2 hours 12 minutes	79.8
Female early riser	8 hours 7 minutes	10 hours 30 minutes	4 hours 7 minutes	65.1
Male early riser	9 hours 35 minutes	7 hours 36 minutes	4 hours 1 minute	63.1
Male night owl	8 hours 57 minutes	7 hours 27 minutes	3 hours 10 minutes	68.7
Male daytime sleep	8 hours 38 minutes	7 hours 18 minutes	12 hours 44 minutes	11.2
Female daytime and poor sleep	3 hours 39 minutes	8 hours 49 minutes	9 hours 54 minutes	11.6

Reading Note: The women in couples with *long synchro nights* sleep for an average of 9 hours 44 minutes.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

Table 3 – **Composition of the types of sleep organisation (%)**

	Long synchro nights	Short synchro nights	Night owl partners	Female early riser	Male early riser	Male night owl	Male daytime sleep	Female daytime and poor sleep	Total
Total	37.1	34.2	2.8	4.8	15.1	4.1	1.1	0.8	100.0
Year									
1985	35.8	37.8	1.9	4.5	14.7	3.4	1.3	0.6	100.0
1998	37.5	34.3	2.7	4.6	15.6	4	0.9	0.3	100.0
2009	37.8	30.6	3.9	5.3	14.9	4.9	1.2	1.4	100.0
Average age of the couple									
< 25	36.2	20.7	11.8	5.0	20.6	2.3	3.1	0.2	100.0
25-34	33.7	31.4	5.2	5.5	17.4	4.1	1.9	0.8	100.0
35-44	29.6	38.9	3.1	4.5	16.0	5.4	1.6	0.9	100.0
45-54	29.4	40.0	2.1	5.0	17.5	4.3	1.1	0.6	100.0
55-64	41.4	34.5	1.1	4.8	12.6	4.3	0.3	0.9	100.0
65+	54.2	28.0	0.6	3.9	10.0	2.5	0.0	0.7	100.0
Employment status of the couple									
Unemployed	53.7	27.3	1.3	4.3	9.7	3.0	0.1	0.6	100.0
Both employed	28.5	40.7	3.7	4.7	15.3	4.7	1.6	0.8	100.0
Only the woman is employed	36.4	33.5	2.9	11.7	8.4	5.5	0.2	1.4	100.0
Only the man is employed	32.5	30.1	3.1	3.2	24.6	3.9	2.0	0.6	100.0
Type of work day									
Did not work	55.4	22.1	4.4	4.8	9.6	2.9	0.1	0.6	100.0
Both partners worked	14.9	59.4	0.7	2.5	13.8	6.0	1.8	0.9	100.0
Only the woman worked	26.8	38.9	2.0	18.6	5.0	6.1	0.4	2.2	100.0
Only the man worked	19.7	34.3	1.7	1.9	34.4	4.1	3.2	0.6	100.0

Reading Note: 53.7% of unemployed couples belong to the *long synchro nights* group.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

Table 4 – **Sleep schedules by type of organisation**

	Median bedtime		Median difference in bedtimes	Median rising time		Median difference rising times
	Women	Men		Women	Men	
Long synchro nights	22:40	22:40	10 minutes	08:00	08:00	30 minutes
Short synchro nights	22:45	22:40	15 minutes	06:50	06:50	30 minutes
Night owl partners	01:35	01:50	10 minutes	10:00	10:00	30 minutes
Female early riser	23:00	23:00	30 minutes	06:50	09:00	2 hours 10 minutes
Male early riser	22:40	22:30	25 minutes	08:00	06:00	2 hours 5 minutes
Male night owl	22:30	00:00	1 hour 30 minutes	07:00	07:00	40 minutes
Male daytime sleep	22:45	07:00	6 hours 40 minutes	07:15	13:02	6 hours
Female daytime and poor sleep[a]		22:50			07:30	

[(a)] as the sleep was observed over two half-nights and due to the less atypical nature of the organisation of sleep during the second half-night, the median times at which the women in this category got up and went to bed cannot be interpreted.
Notes: The times at which persons got up and went to bed are calculated for periods of night-time sleep (or daytime sleep for those who work nights); bedtime: first period of sleep from 20:00, with the exception of *night owl partners*, whose bedtime corresponds to the first period of sleep after midnight; rising time: last period of sleep before noon, except for *i)* male and female *night owl partners*: last period of sleep before 14:00; *ii)* men undertaking *male daytime sleep* and women undertaking *female daytime sleep*: last period of sleep before 16:00. Median bedtime (rising time): time at which half of the individuals have gone to bed (got out of bed). Median difference in bedtimes (rising times): median difference in the times that the partners go to bed (get out of bed).
Reading Note: Half of the women in the *long synchro nights* type are in bed by 22:40.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

The opposite is true for *male early riser* couples: the partners go to bed at similar times, but half of the men are up at 06:00, while half of the women are still sleeping at 08:00. The median difference in sleep time between partners is 1 hour 50 minutes in favour of women.

In couples with a *male night owl*, women begin their night alone: half are in bed by 22:30, while half of the men are still up at midnight. However, the desynchronisation is less marked at the end of the night: the median rising time is the same for both men and women (07:00). This partial desynchronisation results in a median difference in sleep time of 1 hour 20 minutes in favour of women.

1.3.3. Largely Desynchronised Sleep

The types *male daytime sleep* and *female daytime and poor sleep* take account of a highly

discordant organisation of sleep: 90% of the couples' sleep is desynchronised. *Male daytime sleep* describes a situation in which a woman sleeps during the night and her partner sleeps during the day. Once again, this desynchronisation results in a median difference in sleep time of 1 hour 10 minutes in favour of women. *Female daytime and poor sleep* takes account of the opposite situation, where the man sleeps during the night and the woman during the day. However, the organisation of sleep within this group suggests that some women have barely slept at all, which explains the large difference in sleep time between partners (median of 6 hours in favour of men).

Therefore, in a quarter of the couple days studied, at least a third of the couple's sleep is desynchronised. With the exception of sleep schedules where one of the partners sleeps during the day, the desynchronisation of sleep occurs primarily at the time of going to bed or the time of getting up, with the delay by one of the partners being only partially cancelled out. The fact that one of the partners goes to bed later does not necessarily mean that they get up the same amount of time later, and vice versa. For example, among couples made up of a *female early riser* and a *male early riser*, the median desynchronisation of bedtimes is around half an hour, whereas the desynchronisation of rising times is a little over two hours. This partial desynchronisation of bedtimes therefore results in the partners having different sleep durations.

1.4. The Social Gradient of Sleep Synchronisation

The temporal organisation of sleep differs between social categories, as illustrated by the correspondence factor analysis (CFA) carried out on the typology of sleep (de)synchronisation and the professions and socio-professional categories within couples. The first axis of the CFA is heavily polarised by retired couples,[8] who are very different from all the other couples, with the exception of the unemployed and the homogamous executives. As regards sleep, *long synchro nights* are different from all of the other ways of organising sleep. Due to the strong polarisation of this first axis and the fact that retired couples include all retired persons, who present the particularity of no longer being in employment, we performed a second CFA, creating an additional option for retired couples.

The first axis of this new CFA (Figure III) reveals that the situation of unemployed couples or those that are predominantly executives is very different from that of couples who are predominantly blue-collar workers. The former are associated with synchronised sleep and the latter with a desynchronised organisation of sleep (with the exception of *male night owl* couples). The second axis compares two ways of organising synchronised sleep with different durations: *long synchro nights* and *short synchro nights*. The latter are associated with self-employed couples or couples made up of one self-employed partner and one unemployed partner, while *long synchro nights* are associated with couples made up of two unemployed partners or combining one unemployed partner and one white or blue-collar worker.

The conjugal organisation of sleep therefore forms part of the social space. Couples comprised of retired persons and unemployed persons under the age of 60, and the most privileged employed persons are associated with synchronised sleep, while those occupying the least privileged positions have the most desynchronised sleep. Does this difference reveal different preferences with regard to the synchronisation of sleep or, conversely, differing time constraints, particularly in connection with professional activities? The least well-off individuals are more likely to work shifts, which results in a desynchronisation of working hours within the couple, while couples with a more favourable social standing have more opportunity to establish synchronous working days (Lesnard, 2008). The desynchronisation of partners' working hours can also result in the desynchronisation of sleep schedules. We will now also look at the composition of this desynchronisation in order to determine the extent to which sleep-parallel activities are limited or chosen.

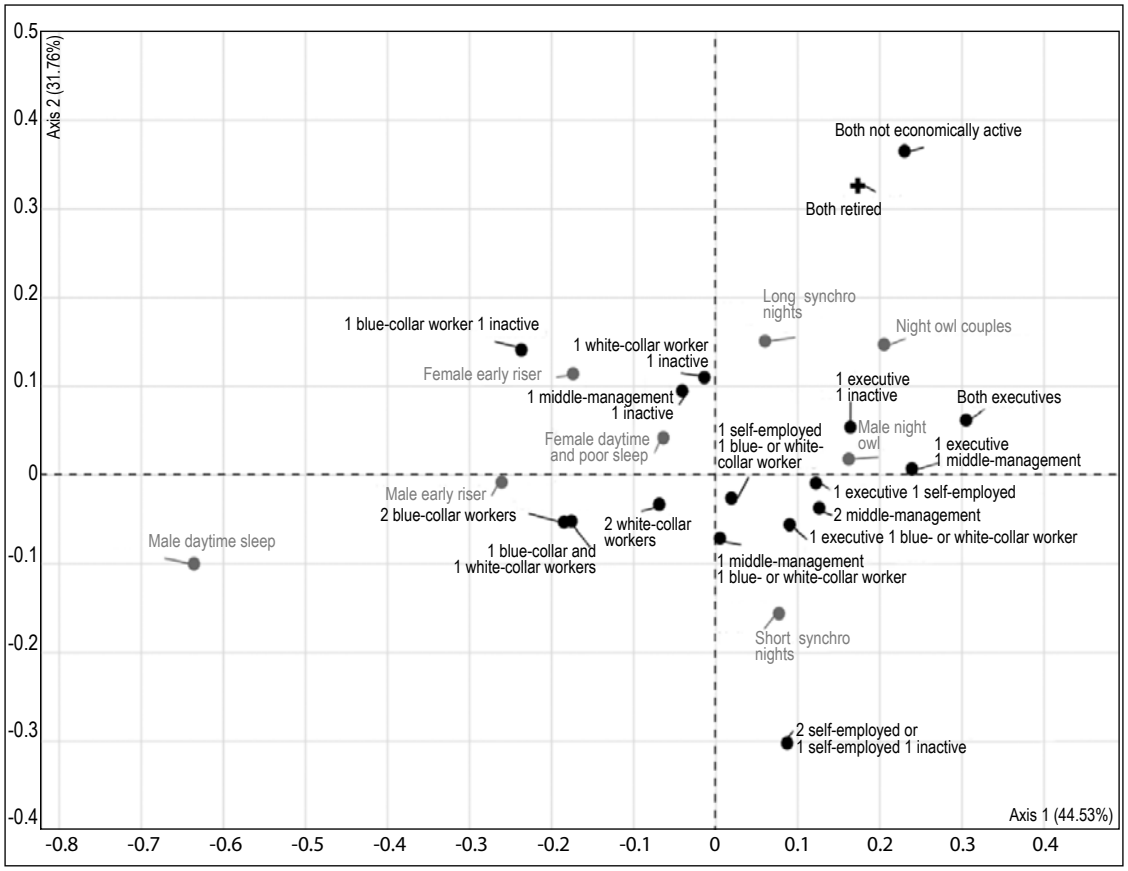
2. Structure of the Desynchronisation of Sleep Within Couples

2.1. A Reduction in the Synchronisation of Sleep Between Partners

Given the stability of the average synchronisation between the three surveys, our typology is established on the basis of all of the surveys. However, under closer scrutiny, it can be seen that this stability actually masks some changes that cancel one another out if we limit ourselves to looking at average trends over a period of 25 years.

8. Retired couples contribute to 60% of the variance in the position of the couples' socio-professional categories for the first axis.

Figure III – **Social space and organisation of sleep**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

Between the mid-1980s and the late 2000s, the structure of the population of individuals in couples has been changing. Couples are getting older: the proportion of couples aged under 25 fell between the mid-1980s and the late 1990s, but then remained stable until the late 2000s; the proportion of couples aged over 60 increased due to the increase in life expectancy at older ages (Daguet & Niel, 2010[9]).

As a result of this ageing of couples and the increase in employment among women, the distribution of couples by employment status is also changing. In 2009, unemployed couples accounted for one-third of couples, whereas they only accounted for one-quarter of couples in 1985. Of the couples where at least one of the partners is employed or a student, in the share of those with both partners are employed increased, from 60% of couples in 1985 to 66% of couples in 2009. Conversely, the proportion of couples in which only the man is employed is decreasing, from one-third to one-fifth.

There has therefore been an increase in the number of couples with the strongest tendency to synchronise. However, between the mid-1980s and the late 2000s, average sleep synchrony actually decreased. In 2009, partners spent an average of 7 hours 35 minutes sleeping together, 13 minutes less than in 1998 and 1985. This reduced synchronisation can be seen in almost all social classes.[10]

At the same time, the organisational landscape of sleep is being partially rebuilt (see Table 4). The most synchronised ways of organising sleep account for 72% of the 2009 couple days, compared with 76% in 1985. However, the changes to synchronised nights are not uniform: although the proportion of *short synchro nights* has decreased by 20%, there were twice as many *night owl partners* in 2009 as there were in 1985 and the proportion of *long synchro nights* has remained relatively stable.

Within couples for whom desynchronisation results from a shift in the sleep schedules of men, only *male night owls* couples are more prevalent, increasing by 40%. There has been a more significant increase in

9. It should be noted that we are reasoning at the couple level, by considering the average age of the partners, whereas Daguet & Niel reason at the individual level.

10. Desynchronisation remains stable in couples where both partners are executives, couples combining a self-employed partner and a white or blue-collar worker, retired couples and couples combining a blue-collar worker and an unemployed partner.

desynchronisation resulting from a shift in women's sleep schedules: *female early riser* couples have increased by 18% and, although they remain a marginal group, couples with *female daytime and poor sleep* account for 2.3 times more couples in 2009 than in 1985 and are now equal in number *male daytime sleep* couples. The *female daytime sleep* configuration saw its greatest increase between 1998 and 2009, which may be explained by the fact that night work is increasing at a faster rate among women than among men (Bué, 2005). The reduced levels of synchronisation among couples could therefore be partly attributable to a change in working hours. However, this does not explain the reduction in synchronisation among retired couples.

2.2. An Increase in Desynchronisation Linked to an Increase in the Amount of Time Spent Watching Television

The fall in sleep synchronisation between the mid-1980s and the late 2000s has not brought about a proportional increase in each of the activities performed in parallel with sleep. It is primarily the result of an increase in the amount of time spent in front of the television while the other person is sleeping: in 1985, television accounted for desynchronisation of 15 minutes; by 2009, this had increased to half an hour. This change can be observed in all types of sleep organisation and across all social classes, with the exception of couples made up of two executives and couples combining a self-employed partner and a partner in an executive or middle-management role.

However, the average amount of time spent working in parallel with sleep remains stable. Whichever year we look at, professional activity[11] accounts for an average of 30 minutes of desynchronisation. This stability can be seen within each type of organisation and each social class; there were no significant changes from one survey to the next. The additional desynchronisation observed between 1998 and 2009 therefore appears to be the result of voluntary desynchronisation to carry out a leisure activity rather than desynchronisation suffered as a result of greater time constraints. Nevertheless, the differences between social classes persist. The change in the structure of desynchronisation concerns almost all types of sleep organisation and social classes; we then reason on the basis of the three surveys simultaneously in order to identify the activities that can be used to differentiate between the different ways of organising sleep.

2.3. Organisation of Desynchronisation

When we look at all years and all types of organisation combined, the activities that account for the majority of desynchronised time are paid work and the associated commutes (31 minutes), television (23 mins), hygiene activities (22 mins), household chores (21 mins) and regular meals (12 mins).

However, the frequency of activities parallel to sleep does not remain uniform throughout the day (Figure IV), and the desynchronisation of getting out of bed is greater than that of going to bed: the median difference between bedtimes is 20 minutes; the difference between the times that the partners get out of bed is twice as long.

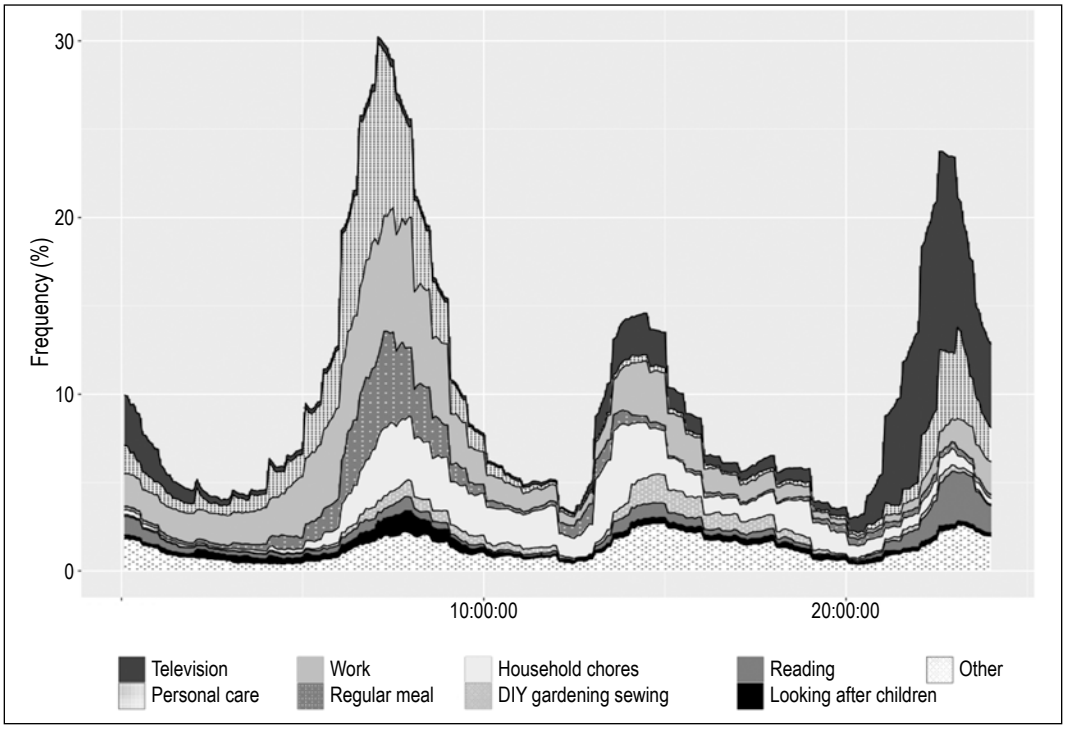
Morning desynchronisation is largely accounted for by work, whether it be paid or unpaid, meals and hygiene activities. By contrast, evening desynchronisation primarily involves television. Reading also features here, something that is almost absent in the morning. Morning desynchronisation is therefore largely linked to essential or restrictive activities, while evening desynchronisation mainly involves leisure activities. The desynchronisation at the start and the end of the day therefore differs in nature. The discordance in the time that partners get out of bed is therefore endured, largely as a result of professional activity, whereas the discordance in bedtimes appears, in the majority of cases, to result from voluntary behaviours, increasing the amount of time spent watching television in particular.

The desynchronisation in the early afternoon is also characterised by its composition: the absence of hygiene activities, but the presence of work (paid or domestic), leisure and semi-leisure activities. This composition, which falls between the morning and evening desynchronisations, can be explained by the specific origin of this desynchronised sleep: it relates to naps, which, according to the typology of the organisation of sleep within couples, is more solitary than other forms of sleep.

Similarly, the structure of desynchronisation differs depending on the type of conjugal sleep involved (Figures V and VI). Baseline desynchronisation made up of household chores, hygiene activities, meals and, to a lesser extent, television, is present regardless of the way in which sleep is organised; however, the frequency

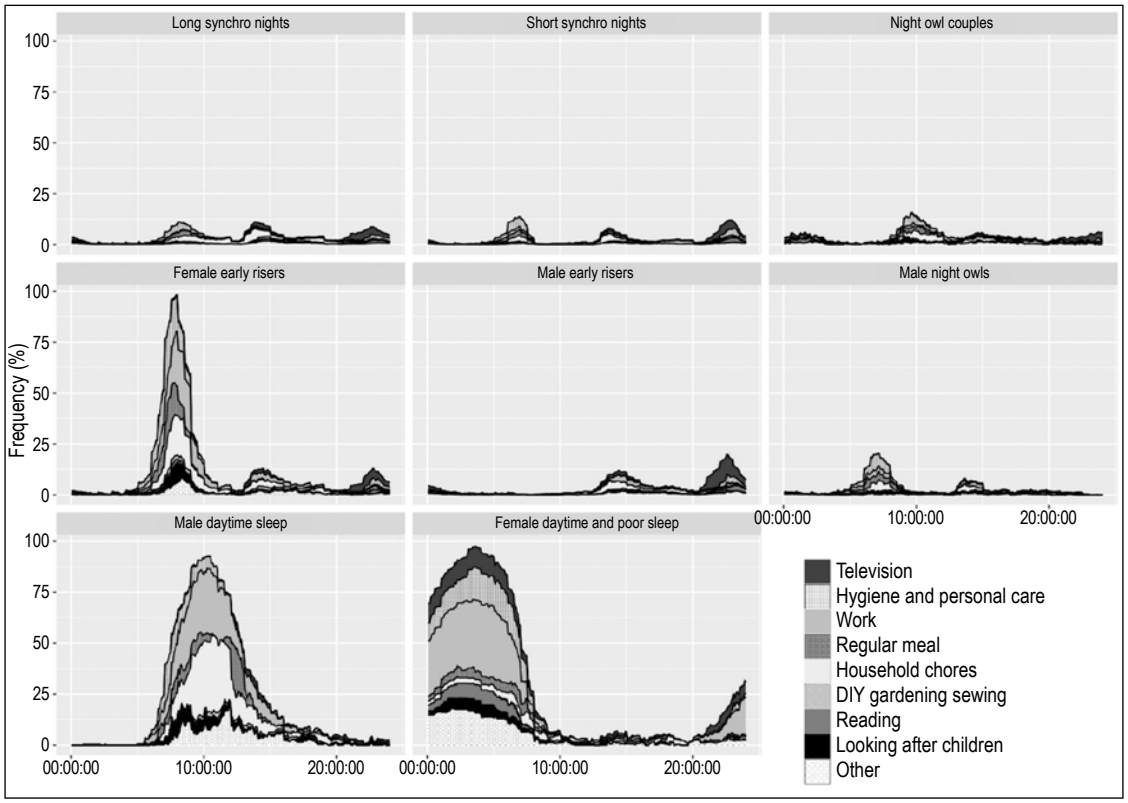
11. We consider work to be all professional activities, studying by students and the commutes associated with these activities, which are inseparable time constraints.

Figure IV – **Composition of the desynchronisation**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

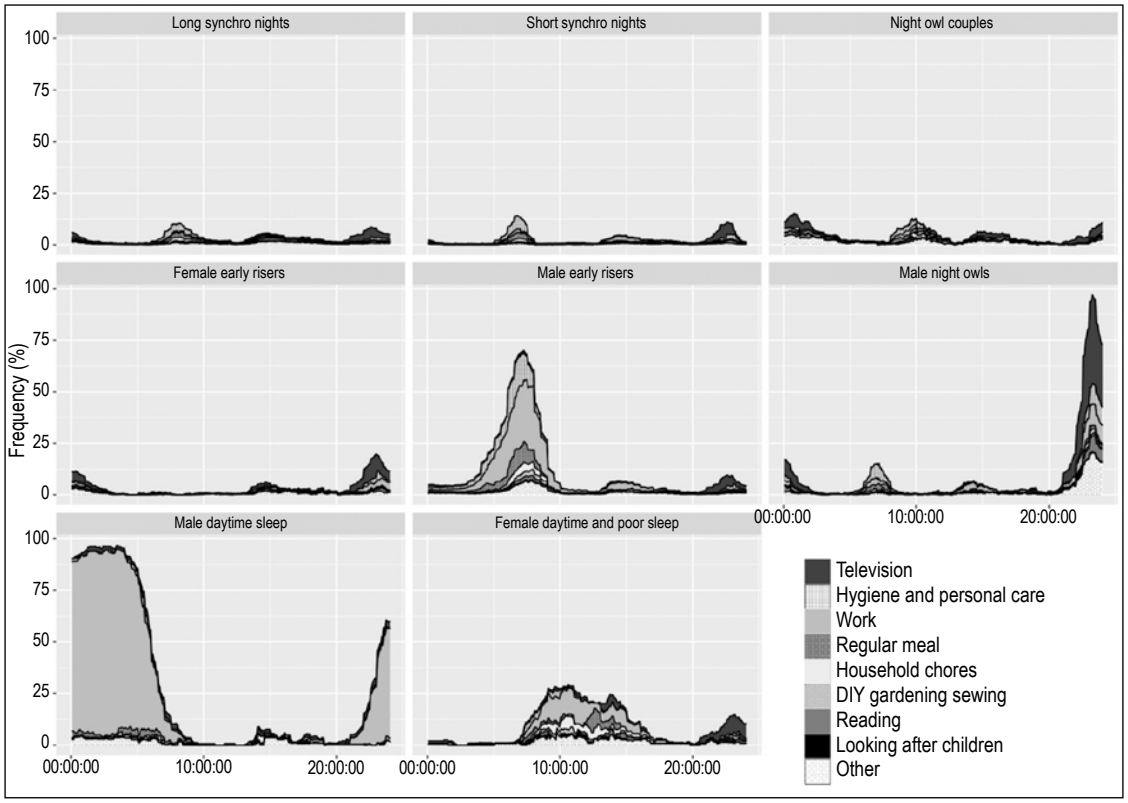
Figure V – **Frequency with which activities are performed by women while their partner is sleeping**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

of these activities varies between classes. The desynchronised types are characterised in particular by the presence of paid work. For *female early riser* couples, work accounts for 56 minutes, so 20% of the desynchronised time; for *male daytime sleep* couples, professional activity accounts for 7 hours 30 minutes, so 60% of the desynchronised time. On the other hand, paid work is virtually absent where sleep is organised in a highly synchronised manner,

Figure VI – **Frequency with which activities are performed by men while their partner is sleeping**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 19,076 heterosexual couples, Metropolitan France.

accounting for less than quarter of an hour. Couples with a *male night owl* have a somewhat peculiar profile, since television accounts for a significant proportion of the desynchronisation.

3. The Desynchronisation of Sleep, the Result of Social Inequalities

As the organisation of sleep is closely linked to social standing, the extent of desynchronisation differs depending on social class, as does its composition: the amount of time devoted to each parallel activity is not proportional to the total duration of desynchronisation. In other words, the proportion of these activities does not remain stable across social classes (see Online Appendix, Table C-2): watching television accounts for an average of 12 minutes of desynchronisation among couples made up of executives (or 9% of their desynchronisation), 20 minutes among couples made up of two white-collar workers (or 14%) and 25 minutes among couples where one partner is a white-collar worker and the other a blue-collar worker (or 15%). As for professional activity, this represents 11% of the desynchronisation among executives, but 23% of that among couples made up of two white or blue-collar workers or couples where one partner is a white-collar worker and the other a blue-collar worker. A comparison of the amount of time allocated to the desynchronised activities within each of the socio-professional categories appears to reinforce the difference between these couples. Professional activity accounts for an average of 15 minutes of desynchronisation among couples made up of two executives, compared with an hour among white or blue-collar couples or couples where one partner is a white-collar worker and the other a blue-collar worker.

Nevertheless, it is important to bear in mind that the working time measured here does not take account of professional activities that are actually performed while one of the partners is sleeping. In reality, work has a much greater impact on the desynchronisation of sleep. Indeed, an individual does not leap out of bed and immediately start work. At the very least, they perform their morning routine activities, which include hygiene activities and breakfast (for those who do not skip this meal). These habits, which should be considered more as pre-empting the end of the night, must therefore be taken into account.

As a result, the unequal synchronisation between social classes is reflected less by a proportional adjustment of the duration of activities parallel to sleep than by a divergence in the amount of time

devoted to two activities in particular: television and, to an even greater extent, work.

The major differences in synchronisation between different types of organisation and social classes are therefore brought about by the performance of a professional activity in parallel with the sleep of one of the partners, which suggests that the discordance in sleep schedules more often than not results from constraints impacting upon the organisation of time rather than partners deliberately opting for staggered schedules. Also, in the following sub-section, we will look more closely at the link between the conjugal organisation of sleep and professional constraints.

3.1. Desynchronisation of Work, Desynchronisation of Sleep

3.1.1. Professional Constraints and Sleep Synchronisation

As is suggested by the position of retired couples in the social space of the organisation of sleep, the most synchronised couples are those in which neither partner is employed. However, the greatest influence on the synchronisation of the partners, more so even than their employment status, is the type of day: the landscape of the conjugal organisation of sleep differs depending on whether both partners, one partner or neither partner worked on the day of the survey.

Sleep is synchronised to the greatest degree during non-working days, with average synchrony of 80%. Four out of every five non-working couple days are found within the three most synchronised classes, and half of these are among the *long synchro nights*. The days on which both partners worked fall in the middle, with three quarters being among the most synchronised ways of organising sleep. Finally, the most desynchronised are those where only one of the partners worked, particularly in cases where only the man went to work. The average synchrony on these days is 73% and a third of the couples involved are those with a *male early riser*. There are also four times as many *female early risers* for the days on which only the woman went to work than are seen in the sample as a whole.

However, taken in isolation, the observation of a correlation between the organisation of sleep and the fact of having worked or not provides limited information with regard to the extent to which professional activity can affect sleep. The times at which people start and end their working day provide an initial indication of the influence this can have on the conjugal organisation of sleep. Half of couples with a *male early riser* who worked started their working day at 06:50 or earlier, so 45 minutes before their peers in the *short synchro nights* couples, and two hours before those in the *long synchro nights* couples (Table A2-1 in the Appendix). Men belonging *male daytime sleep* couples also have median start and end times for their working day that correspond to night work. In addition, if we limit ourselves to only looking at couples in which both partners worked, the median time between the start of the partners' working day is three hours among *male early riser* couples, whereas it was just 40 minutes among couples with *long synchro nights*.[12] These differences in the types and organisation of sleep suggest that the start of the working day in the morning dictates the time at which individuals get up.

3.1.2. Tell Me How You Sleep, I Will Tell You How You Work

The above results suggest that partners' sleep schedules and the options they have for coordinating them are strongly linked to the organisation of their working days. In order to more closely analyse the influence of professional activity on sleep synchronisation, we will look at the extent to which couples who organise their sleep in a similar way also have similarly organised professional lives.

In order to do so, by restricting our analysis to couples in which both partners work,[13] we are cross-referencing the typology of sleep organisation with a typology of the working days of the couples, established using the same method: the activities of each of the partners are dichotomised into *work* and *non-work*, then the couple's activities are coded as *female work, male work, couple's work and non-work*. They include 13 types of day (see Figure A2 in Appendix 2). We performed a correspondence factor analysis (CFA) on the table cross-referencing the types of sleep organisation and the types of working days.

The first axis of the CFA represents half of the inertia of the point cloud linking *male daytime sleep* to the *male night-female day* way of organising work. These very specific ways

---

12. The median difference in the time at which couples who worked got out of bed was 2 hours 10 minutes among those with a male early riser *and 20 minutes among those with* short synchro nights.

13. Couples in which both partners work correspond in this case to couples where the two partners are employed or are students. We retain all couples meeting this condition, regardless of whether or not they worked on the day of the survey.

of organising work and sleep are the opposite to all the others and highlight the reversal of the diurnal rhythm brought about by night work. Sleep is normally a night-time activity and only becomes a daytime activity under the constraint of nocturnal professional activity.

In order to better differentiate between the other types of organisation, we performed a second CFA (Figures VII and VIII) by positioning *male daytime sleep* and the *male night-female day* way of organising work as additional variables.[14]

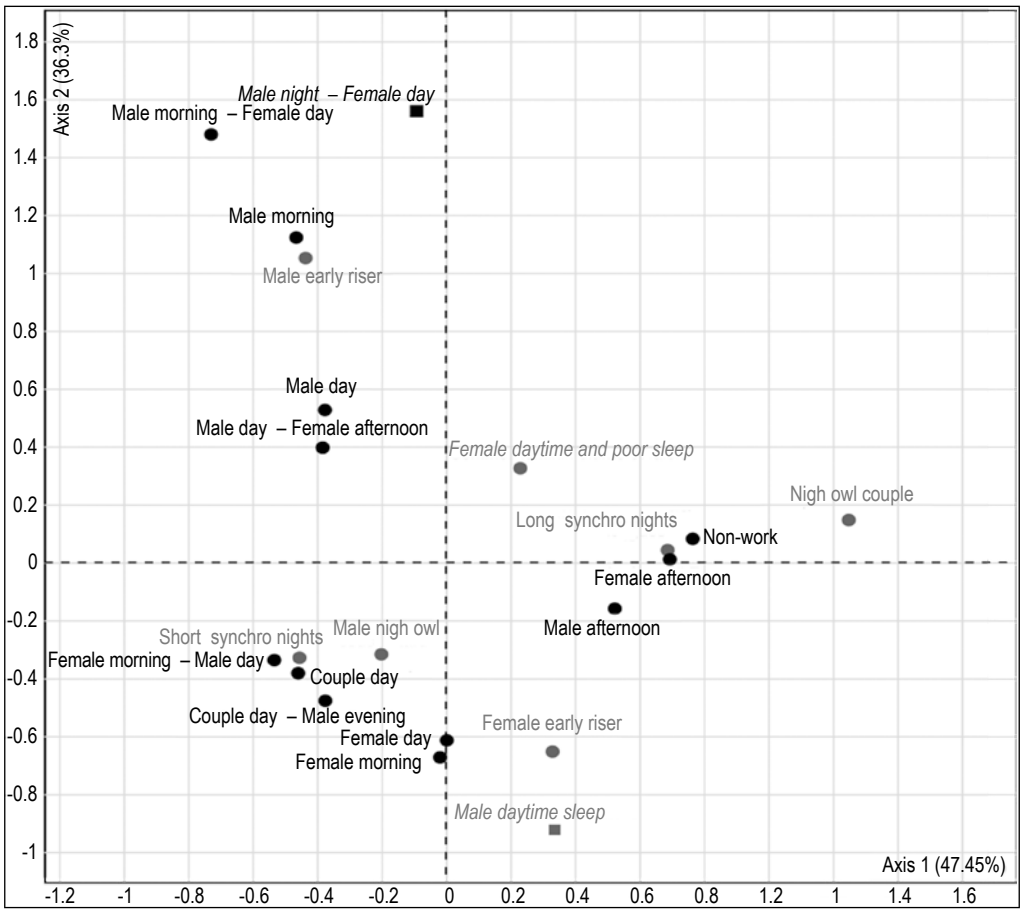
The first axis differentiates between synchronised working days and non-working days. The latter are associated with *long synchro nights* and *night owl partners*, whereas the working days are associated with *short synchro nights*. This axis differentiates between two types of work synchronisation: through the (relatively) synchronised working hours of the partners or by the joint absence of work. Both are associated with synchronous sleep, but on different schedules.

The second axis takes account of the influence of desynchronisation on working days as a result of the man's working hours and the conjugal organisation of sleep. Days during which the man commences his working day very early or is the only partner who goes to work, which are associated with *male early riser* couples are different from the more synchronised working days (*couple days*) associated with *short synchro night* couples and *female early riser* couples. The third axis takes account of the opposite situation, which characterises the desynchronisation brought about by the woman's working hours. Days on which only the woman works, which are associated *female early riser* couples differ from the more synchronised working days (*couple days*).

The CFA therefore highlights coherence between the conjugal organisation of sleep and work. The tendency towards the synchronisation of sleep is undermined when the partners' working hours are too desynchronised or atypical: excessive discordance in their working days results in discordance in their sleep schedules. The more

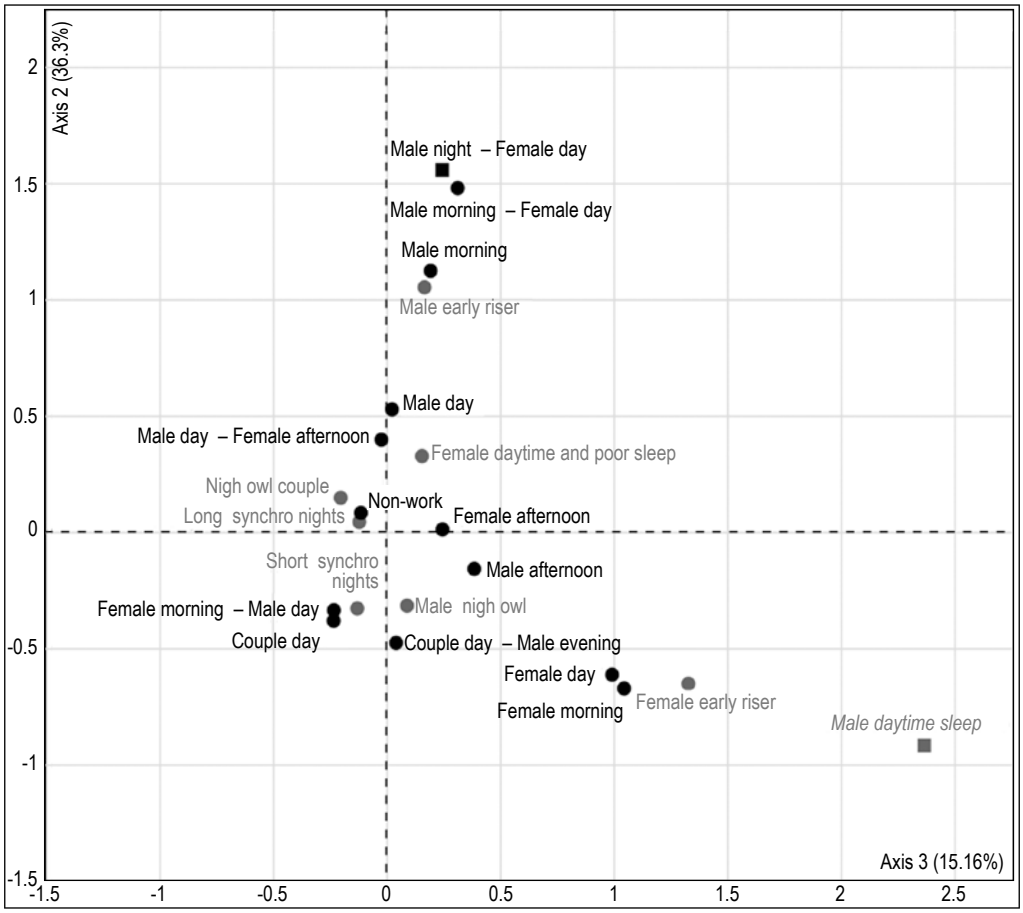
14. We retained the first three axes, which represent 47.4%, 36.3% and 15.2% of the total inertia, respectively.

Figure VII – **Organisation of sleep and work, plotting of the first two axes of the CFA**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 8,762 heterosexual couples within which the two partners are employed or students, Metropolitan France.

Figure VIII – **Organisation of sleep and work, plotting of axis 2 and 3 of the CFA**



Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 8,762 heterosexual couples within which the two partners are employed or students, Metropolitan France.

desynchronised their working hours, the more out of sync their sleep becomes.[15] By imposing its schedule, professional activity restricts the ability of individuals to organise their daily activities and, of course, their sleep.

The more freedom the partners have in setting their own working hours, the more synchronised their sleep (Table A2-2 in Appendix 2). Among the couples in which both partners worked, 86% of those who are able to set their own working hours enjoyed a night of synchronised sleep, compared with 72% of those who both have restrictive working hours. The synchronisation of sleep within couples therefore reflects the way in which their working days are organised: the less their working hours coincide, the less time the partners spend together (Lesnard, 2008) and the less they are able to coordinate their sleep. As is the case with the synchronisation of working hours, sleep synchronisation reflects the inequality suffered by individuals on the labour market. The least qualified individuals are most likely to have working hours that conflict with those of their partner and the same is true of their sleep schedules.

3.2. The Gender of Desynchronisation

Sleep desynchronisation reflects another type of inequality: gender inequalities regarding the division of labour within couples. Indeed, the composition of desynchronisation varies depending on the gender of the person who is awake. Men spend more time at work than women, while the latter perform more household chores. Across all types of organisation, women devote an average of 20 minutes to household chores while their partner is sleeping, four times longer than is spent by men on these tasks while their partner is sleeping. However, men spend an average of 22 minutes working while their partner is sleeping, compared with 9 minutes for women. This gendered difference in the composition of desynchronised activities is stable across all three surveys, even though the gap between men and women for these two activities is narrowing (Brousse, 2015).

15. Within couples in which both partners work and indeed worked on the day of the survey, the coefficient of determination between the sleep synchronisation rate and the work synchronisation rate is 0.52; in other words, half of the variance in the sleep synchronisation rate is explained by its correlation with the synchronisation of work.

The gender inequalities present in the desynchronisation are most visible in the two types of morning desynchronisation (couples that include a *female early riser* and couples that include a *male early riser*). These are organised in very similar ways: one partner ends the night alone; however, this quasi-symmetry in the organisation of sleep is not seen when it comes to the organisation of sleep around work. Although *male early riser* couples are primarily associated with days on which only the man works, *female early riser* couples are associated with days worked by women and synchronised working days. It therefore does not appear that professional activity is the only factor behind women getting out of bed early, as is the case for men.

By separating out the duration of activities according to gender, women belonging to *female early riser* couples perform 48 minutes of paid work and 54 minutes of household chores, while men belonging to *male early riser* couples perform 1 hour 18 minutes of paid work and 12 minutes of household chores. Men and women therefore do not get up earlier than their partners for the same reasons.

In order to compare the share of personal activities with the share of joint activities during the desynchronised time, we calculate a ratio measuring the personalisation of the desynchronised time spent awake between midnight and noon: (work + hygiene + meals + reading + television) / (work + hygiene + meals + reading + television + household chores + looking after children)

Only the duration of the activities performed while the other partner is sleeping is taken into account when calculating the ratio. The higher the ratio, the higher the share of personal activities in the desynchronised time spent awake. We compare the personalisation of activities within *male early riser* and *female early riser* couples.

Between midnight and noon, 90% of the desynchronised activities performed within *male early riser* couples have no direct joint purpose; however, this is only the case for two thirds of the activities performed within couples that include a *female early riser*. The share of personal activities in the desynchronised time spent awake is 1.4 times greater among men than among women.

However, the days among *female early riser* couples and *male early riser* couples are not perfectly comparable: half of women within the former did not work on the day in question, compared with a third of men in the latter. The lower frequency of professional activity among *female early riser* couples could therefore mechanically reduce the personalisation of their activities. Also, in order to measure the gender-specific effect on the personalisation of the time spent awake, we will estimate a multiple linear regression model with an interaction effect between gender and the type of day (working day or non-working day) and an interaction effect between gender and the presence of at least one child under the age of 7 in the household (Table 5).

The interaction effect between gender and the type of day is significant, which highlights that it is not just professional activity that determines the composition of desynchronisation; the gender of the partner who is awake also has an influence. We now reason on the basis of the adjusted mean predictions, obtained by setting the modalities of certain variables and taking the mean values observed for the other variables, which are easier to understand than those of the interaction coefficients.

The predicted personalisation ratio is consistently lower for women than for men and it presents greater variation (Figure IX-A). The absence of work on a given day does not bring about an identical reallocation of time among men and women and the difference in the activities performed is greater on non-working days. The rate of personalisation of the activities carried out by men on non-working days does not differ significantly from that of women on working days. Even if they worked on the day of the survey, women allocated a larger proportion of the time they spent awake and alone on domestic tasks than men did.

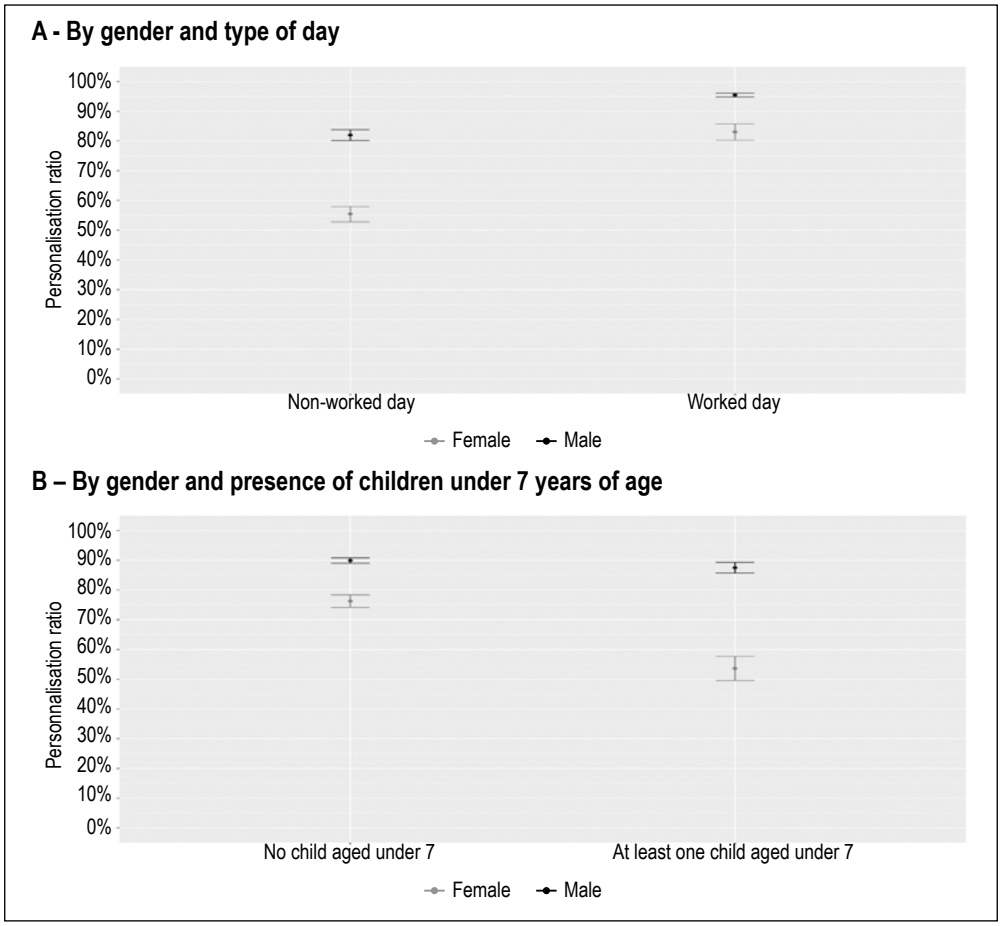
The presence of young children also has an effect on the gender of the individual who gets up early. Having at least one child under the age of 7 significantly reduces the personalisation of

Table 5 – **Multiple linear regression modelling the personalisation of time spent awake and alone**

Constant	0.887 ***
Male	0.071 ***
Non-working day	-0.277 ***
At least one child under the age of 7	-0.226 ***
Male×non-working day	0.154 ***
Male×at least one child under the age of 7	0.202 ***
R^2	0.327
R^2 adjusted	0.327

Reading Note: On a non-working day and for individuals without children, being a man rather than a woman increases the personalisation of time spent awake by 7 percentage points. Significance: ***< 0.001. Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 4,300 individuals belonging to *male early riser* and *female early riser* couples.

Figure IX – **Adjusted mean predictions of the personalisation ratio**



Reading Note: (A) On working days, the predicted personalisation ratio for women is 83%. (B) For women who do not have a child aged under 7, the predicted personalisation ratio is 76%.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 4,300 individuals belonging to the *male early riser* and *female early riser* groups.

the activities performed by women, but does not have any significant effect on men (Figure IX-B), which reinforces the gender inequalities in the composition of desynchronised activities.

The composition of desynchronisation within couples in which one of the partners gets up significantly earlier than the other therefore reflects the gender inequalities in the division of work within couples. Although men and women get up earlier to go to work, women also get up earlier to complete domestic tasks.

* *
*

Highly synchronised across the French population as a whole, sleep tends to be even more synchronised within couples. Nevertheless, not everybody enjoys the same degree of freedom when it comes to harmonising their schedules and the typology of conjugal sleep organisation allows us to highlight ways in which partners' sleep is mismatched. Synchronised nights are contrasted with more discordant ways of organising sleep, in which one partner goes to bed later or gets up earlier, or those that are fully discordant, where one partner sleeps at night and the other during the day.

Among couples, professional activity is the main reason for unequal opportunities to synchronise the partners' sleep schedules. By imposing its schedule, work restricts the ability of individuals to organise their sleep. At the level of the couple, where the discordance in the working days of the partners is too great, this results in the desynchronisation of sleep. As a result, the desynchronisation of sleep schedules reflects that of working hours, which offers a new perspective on the individual inequalities in the economic system at the level of couples.

Within couples, the discordance in sleep schedules also reflects inequalities in the division of paid work and domestic tasks. Men and women do not perform the same activities while their partner is sleeping: more time devoted to household chores

for women and more time spent at work for men. The differences in the way men and women use their time is also reflected in the organisation of sleep schedules at the individual level.

However, it is inequalities in labour market positions that produce the greatest degree of inequality in the synchronisation of sleep at the level of couples. The more favourable a person's employment situation is, the more opportunity they have to match their working hours to those of their partner, and the greater the opportunity for the couple to synchronise their sleep. □

Link to Online Appendices: https://www.insee.fr/en/statistiques/fichier/5347218/ES-522-523_Rauch_Online_Appendices.pdf

BIBLIOGRAPHY

Amossé, T. (2019). Rénovation de la PCS - 2018-2019 – Propositions du Groupe de travail du Cnis – Document provisoire présenté lors de la réunion de la Commission Emploi Revenu. https://www.cnis.fr/wp-content/uploads/2019/01/DPR_2019_1re-reunion_ComEmploi_R%C3%A9novation-PCS-2018-2019_Note-d%C3%A9taill%C3%A9e.pdf

Aubert, V. & White, H. (1959a). Sleep: A Sociological Interpretation. I. *Acta Sociologica*, 4(2), 46–54. https://doi.org/10.1177/000169935900400207

Aubert, V. & White, H. (1959b). Sleep: A Sociological Interpretation. II. *Acta Sociologica*, 4(3), 1–16. https://doi.org/10.1177/000169935900400301

Biddle, J. E. & Hamermesh, D. S. (1990). Sleep and the Allocation of Time. *Journal of Political Economy*, 98(5, Part 1), 922–943. https://doi.org/10.1086/261713

Brousse, C. (2015). La vie quotidienne en France depuis 1974. Les enseignements de l'enquête Emploi du temps. *Économie et statistique*, 478(1), 79–117. https://doi.org/10.3406/estat.2015.10559

Bué, J. (2005). Travail de nuit et du soir depuis dix ans: une progression plus rapide pour les femmes que pour les hommes. *Premières informations et premières synthèses*, 40(2). http://www.epsilon.insee.fr:80/jspui/handle/1/3985

Burgard, S. A. & Ailshire, J. A. (2013). Gender and Time for Sleep among U.S. Adults. *American Sociological Review*, 78(1), 51–69. https://doi.org/10.1177/0003122412472048

Cha, S.-E. & Eun, K.-S. (2014). Gender Difference in Sleep Problems: Focused on Time Use in Daily Life of Korea. *Social Indicators Research*, 119(3), 1447–1465. https://doi.org/10.1007/s11205-013-0550-1

Cha, S.-E. & Eun, K.-S. (2018). Convergence in Sleep Time Accomplished? Gender Gap in Sleep Time for Middle-Aged Adults in Korea. *International Journal of Environmental Research and Public Health*, 15(4), 803. https://doi.org/10.3390/ijerph15040803

Chatzitheochari, S. & Arber, S. (2009). Lack of sleep, work and the long hours culture: Evidence from the UK Time Use Survey. *Work, Employment and Society*, 23(1), 30–48. https://doi.org/10.1177/0950017008099776

Coveney, C. M. (2014). Managing sleep and wakefulness in a 24-hour world. *Sociology of Health & Illness*, 36(1), 123–136. https://doi.org/10.1111/1467-9566.12046

Daguet, F. & Niel, X. (2010). Vivre en couple. La proportion de jeunes en couple se stabilise. *Insee Première*, (1281).

de Saint Pol, T. (2006). Le dîner des français : Un synchronisme alimentaire qui se maintient. *Économie et statistique*, 400(1), 45–69. https://doi.org/10.3406/estat.2006.7111

Degenne, A., Lebeaux, M.-O. & Marry, C. (2002). Les usages du temps : Cumuls d'activités et rythmes de vie. *Économie et Statistique*, 352(1), 81–99. https://doi.org/10.3406/estat.2002.7394

Emploi du temps (EDT) – 1985-1986, Insee (producteur), ADISP (diffuseur)

Emploi du temps (EDT) – 1998-1999, Insee (producteur), ADISP (diffuseur)

Emploi du temps, (EDT) – 2009-2010, Insee (producteur), ADISP (diffuseur)

Fisher, K. & Robinson, J. P. (2010). Daily Routines in 22 Countries: Diary Evidence of Average Daily Time Spent in Thirty Activities. Centre for Time Use Research.

Hamermesh, D. S. (2002). Timing, togetherness and time windfalls. *Journal of Population Economics*, 15(4), 601–623.

Hislop, J. & Arber, S. (2003). Sleepers Wake! the Gendered Nature of Sleep Disruption among Mid-life Women. *Sociology*, 37(4), 695–711. https://doi.org/10.1177/00380385030374004

Insee (2017). Enquête Emploi du temps et Décisions dans les couples 2009-2010 – Dictionnaire des codes.

Lesnard, L. (2008). Off-Scheduling within Dual-Earner Couples: An Unequal and Negative Externality for Family Time. *American Journal of Sociology*, 114(2), 447–490. https://doi.org/10.1086/590648

Lesnard, L. (2010). Setting Cost in Optimal Matching to Uncover Contemporaneous Socio-Temporal Patterns. *Sociological Methods & Research*, 38(3), 389–419. https://doi.org/10.1177/0049124110362526

Maume, D. J., Hewitt, B. & Ruppanner, L. (2018). Gender Equality and Restless Sleep Among Partnered Europeans: Gender Equality and Restless Sleep. *Journal of Marriage and Family*, 80(4), 1040–1058. https://doi.org/10.1111/jomf.12488

Maume, D. J., Sebastian, R. A. & Bardo, A. R. (2009). Gender Differences in Sleep Disruption among Retail Food Workers. *American Sociological Review*, 74(6), 989–1007. https://doi.org/10.1177/000312240907400607

Maume, D. J., Sebastian, R. A. & Bardo, A. R. (2010). Gender, Work-Family Responsibilities, and Sleep. *Gender & Society*, 24(6), 746–768. https://doi.org/10.1177/0891243210386949

Mauss, M. (1936). Les techniques du corps. *Journal de psychologie*, 32(3-4), 271–293.

Meadows, R., Arber, S., Venn, S. & Hislop, J. (2008). Engaging with sleep: Male definitions, understandings and attitudes. *Sociology of Health & Illness*, 30(5), 696–710. https://doi.org/10.1111/j.1467-9566.2008.01088.x

Méda, D. (2001). Centralité du travail, plein emploi de qualité et développement humain. *Cités*, 4(8), 21–33.

Ricroch, L. (2012). En 25 ans, le temps passé à dormir la nuit a diminué de 18 minutes. *In: Insee Références. France, portrait social 2012* (107–118).

Robinson, J. P. & Michelson, W. (2010). Sleep as a victim of the « time crunch » – A multinational analysis. *Electronic International Journal of Time Use Research*, 7(1), 61–72. https://doi.org/10.13085/eIJTUR.7.1.61-72

Schwartz, B. (1970). Notes on the Sociology of Sleep. *The Sociological Quarterly*, 11(4), 485–499. https://doi.org/10.1111/j.1533-8525.1970.tb01320.x

Taylor, B. (1993). Unconsciousness and society: The sociology of sleep. *International Journal of Politics, Culture and Society*, 6(3), 463–471. https://doi.org/10.1007/BF01415970

Venn, S., Arber, S., Meadows, R. & Hislop, J. (2008). The fourth shift: Exploring the gendered nature of sleep disruption among couples with children. *The British Journal of Sociology*, 59(1), 79–97. https://doi.org/10.1111/j.1468-4446.2007.00183.x

Williams, S. J. (2002). Sleep and Health: Sociological reflections on the dormant society. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*, 6(2), 173–200. https://doi.org/10.1177/136345930200600203

Léger, D., Giordanella, J.-P., Frioux, D., Hardy, A., Hebel, P., Fatoux, F. & de Saint Pol, T. (2016). *Retrouver le sommeil, une affaire publique*. Terra Nova.

APPENDIX 1

PROFESSIONS AND SOCIO-PROFESSIONAL CATEGORIES AT THE COUPLE LEVEL

In order to build our nomenclature for the PCS at the level of couples, we draw upon that used for the household PCS, established by the Cnis working group on the revision of the classification of occupations and socio-professional categories (PCS, 2018-2019) (Amossé, 2019). Contrary to the nomenclature established by the working group, retired persons are not included in their former social group, as we wish to study the organisation of sleep in connection with the specific features of the professional situation of couples.

Table A1 – **Couple's social category (PCS)**

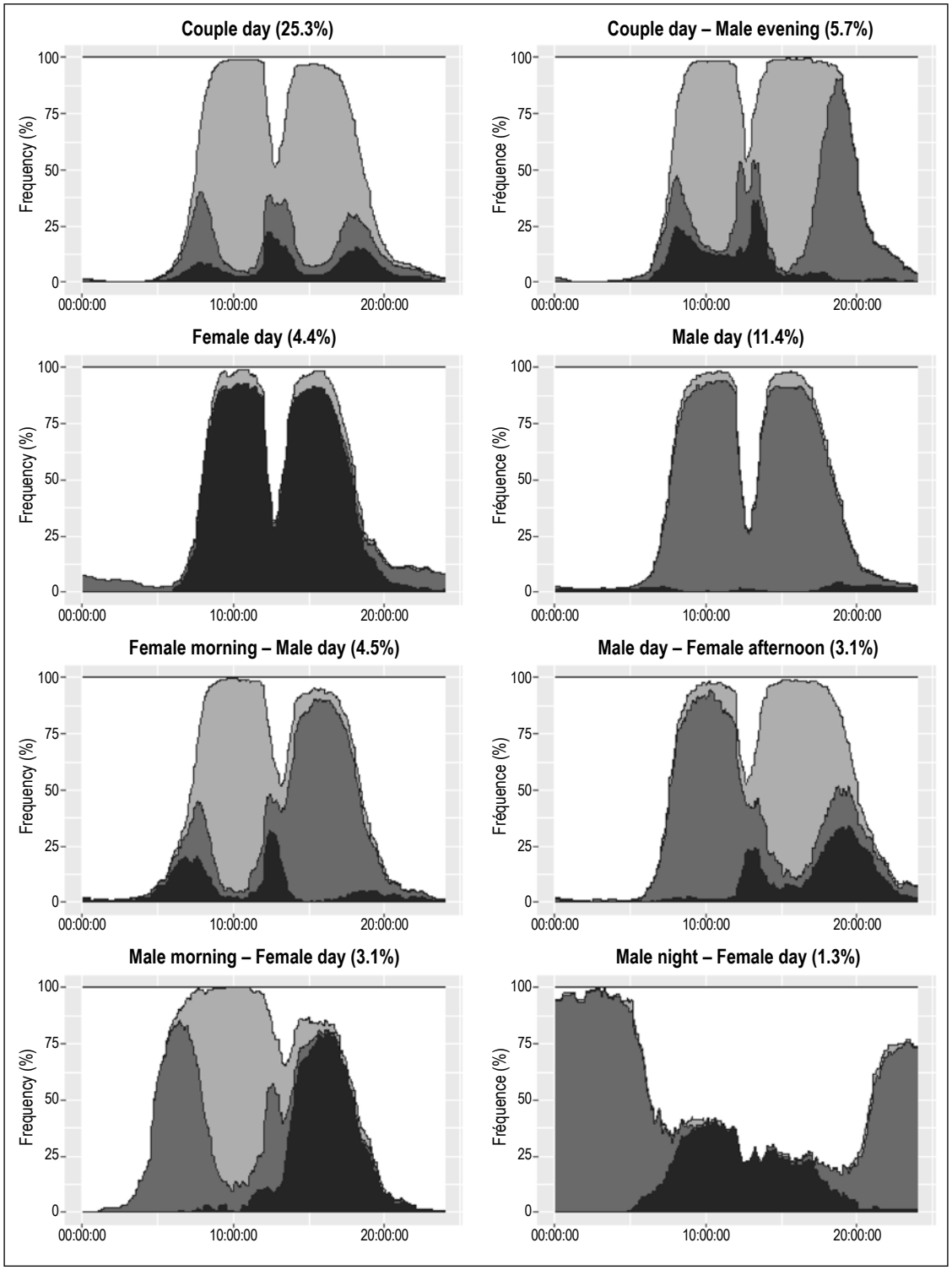
Couple's level PCS	Partners' PCS
Executive	Both partners executives Executive and middle-management employee
Middle-management employee and executive	Executive and white or blue-collar worker Executive and unemployed[a] Middle-management employee or executive and self-employed Both middle-management employees
Couples with a dominant white-collar worker and middle-management employee	Middle-management employee and white or blue-collar worker Middle-management employee and unemployed[a] Both white-collar workers
Couples with a dominant self-employed worker	Both self-employed workers or self-employed and unemployed[a] Self-employed and white or blue-collar worker
Couples with a dominant blue-collar worker	Blue-collar worker and white-collar worker Both blue-collar workers
White or blue-collar worker and unemployed or comparable unemployed	White-collar worker and unemployed[a] Blue-collar worker and unemployed[a] Both unemployed[b]
Retired couples	Retired couples

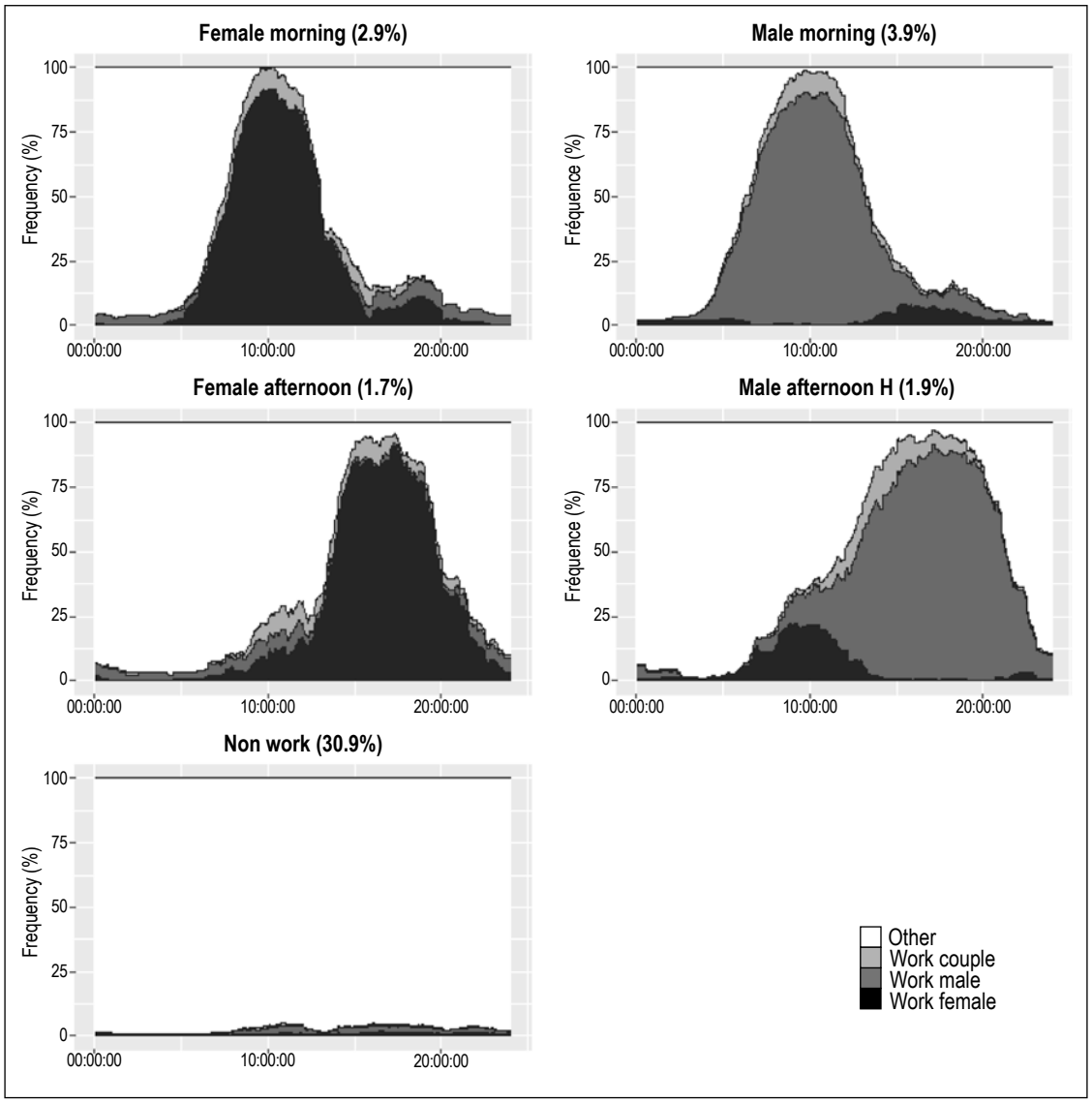
(a) unemployed or retired
(b) under 60 years of age

APPENDIX 2

TYPOLOGY OF WORKED DAYS AND ADDITIONAL STATISTICS

Figure A2– **Typology of worked days within economically active* couples**





* Including students
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 8,762 heterosexual couples, Metropolitan France.

Table A2-1 – **Working hours according to types of sleep organisation**

	Median work start time		Median work end time	
	Women	Men	Women	Men
Long synchro nights	09:05	08:55	18:12	18:40
Short synchro nights	08:00	07:35	17:50	18:20
Night owl partners	14:13	12:32	20:00	20:00
Female early riser	07:50	11:35	17:40	20:00
Male early riser	09:05	06:50	18:05	17:40
Male night owl	08:05	08:05	17:40	19:08
Male daytime sleep	08:05	20:49	17:20	05:55
Female daytime and poor sleep	20:12	08:05	07:45	18:30

Reading Note: Within the *short synchro nights* group, half of women start working at 8:00.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 5,691 women and 7,812 men who worked on the day of the survey, Metropolitan France.

Table A2-2 – **Distribution of the types of organisation according to the degree of freedom to set their own hours (%)**

	Long synchro nights	Short synchro nights	Night owl partners	Female early riser	Male early riser	Male night owl	Male daytime sleep	Female daytime and poor sleep	Total
Free for both	20.6	65.0	0.6	0.6	6.7	5.3	0.4	0.7	100
Imposed for one, free for the other	15.0	59.7	0.6	2.2	13.6	6.4	1.5	1.1	100
Imposed for both	11.2	60.3	0.3	2.6	16.3	5.2	2.6	1.5	100
Total	14.2	61.1	0.5	2.1	13.6	5.6	1.8	1.2	100

Reading Note: 65% of couples who are free to determine their own working hours belong to the *short synchro nights* group.
Sources and Coverage: Insee, Time Use Surveys 1985-1986, 1998-1999, 2009-2010; 4,127 heterosexual couples within which both partners worked on the day of the survey, Metropolitan France.