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Diary information versus questionnaire information

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***Welfare Distribution
Working Paper 26:2002***

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**Paid work and unpaid work
- diary information versus questionnaire information¹**

Jens Bonke²

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Abstract

Time-use information is preferably obtained from diaries, as this method is considered more reliable than information from questionnaires. The diary-technique seems to be unique in catching the rhythm of every day life and thereby the structuring of work and leisure during a well-defined and memorable period of time. However, there is no a priori reasoning why major differentials at least at an aggregate level should be found by using the two techniques. The purpose of this paper is to test this hypothesis by using the Danish Time Use Survey 2001, where diary information as well as survey-questions are asked about the time spent on paid work and unpaid/household work. The advantage of the latter technique is that it can easily be integrated into surveys. Thus the American National Survey of Families and Households (NSFH) already contains two waves, and a new wave for 2001-2002, which allows for updated American-European time-use comparisons.

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Keywords: Time Allocation and Labour Supply, Methodology for Collecting Microeconomic Data

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I. Introduction

In the last decades time-use surveys including diaries were performed in most European countries, and more than 16 surveys are ongoing at present or have been finished lately³. These data are of great importance for different policy purposes by offering information on peoples structuring of everyday life, i.e. labour supply to the labour market, time spent on household work and participation in leisure activities. Furthermore, the data allow companies and firms to direct their commercial activities on a more firm ground, not to mention that information on time-allocation within the families addresses important gender and caring issues, an area of continuous attention among female movements and politicians dealing with equal opportunities. An important drawback of time-use information is, however, that they are gathered infrequently owing to the high costs involved in this type of data-collection⁴.

The purpose of this paper is to compare time-use information from diaries with similar information from questionnaires to reveal if the method to gather information show significant differences on the level and the distribution of paid work and unpaid/household work. Thus diary information and survey-information are compared by using the Danish Time-Use Survey 2001 in which questions used in the Danish part of the European Community Household Panel and in the American National Survey of Families and Households (NSFH) are included.

II. Available data on paid and unpaid work

Information on paid work usually comes from registers established and maintained by public authorities for policy purposes. Thus public and private employers are obliged to provide data from their payroll accounts about their employees' wages and salaries as well as their number of working hours. The problem with this kind of information is that only paid work is included not the employee's actual work

³Besides the 16 time-use surveys another 12 are conditional on funding.

⁴In Britain small pre-coded (33-categories) diary-inserts proposed for ordinary surveys are reported to work successfully, as they show similar time-use means at the 10-category level. Britain has now 2k of such diaries from 1995, 2k from 1999, 1.6k from 2001, and plans to collect a whole year sample of 8k in 2003-4. The instrument takes 7-8 minutes to administer and is first of all aimed at filling-in the periods between ordinary diaries (personal information 301002 by Jonathan Gershuny, University of Essex, UK)

time. Furthermore, other characteristics of the employees are to be gathered from other registers, which for most countries only is possible if various security procedures are observed, if at all possible. Moreover, employer-reported evidence offers no information on employee's workloads for which reason there is no available information on the distribution of work within the population.

For these reasons, information on paid work is also frequently gathered in most countries by exercising surveys. Here, a sample of people is interviewed face-to-face or by computer-aided techniques about their weekly working hours in primary or secondary work and eventual number of hours overtime. It is disputable if this offers reliable information even if the previous week is referred to. The number of working hours over a seven day period might not be remembered precisely, or the respondent wish to give appreciable replies implying that they report more or less work than they actually do – in both cases creating systematic errors. The definition of work may also vary because the appropriate information is not given or interpreted in the same way by different groups of the population, for which reason random errors may occur.

However, the major drawback for registers, as well as for labour-force surveys, is that only paid work is included leaving unpaid/household work out of consideration. The implication is that investigations of time-allocation are restricted to include only labour market and ordinary socio-economic factors, not the effect of family obligations materialized through unpaid/household work implying different simultaneous allocations of paid and unpaid work.

In most time-use surveys, however, information on paid work as well as on unpaid work is present. Thus, the number of paid working hours derives from questions and diary-information, simultaneously, whereas the number of hours spent on unpaid/household work only emerges from the latter source. It has thus hitherto been possible to make comparisons of the implication of using different paid work information (Carlin & Flood, 1997), while comparing the data-collecting effect on the amount of time spent on household work has so far not been possible. Although alternative information on household work is to be found in surveys, these usually only reveal the proportion of his/her share of this work on a scaling basis, not the exact numbers of hours spent. Additionally, there seems to be a tendency among both partners to “dedicate” more work to the spouse than to themselves, just as non-symmetrical opinions are expressed insofar husbands'

dedication to wives are proportionally bigger than wives' dedication to husbands (Bonke, 1997). For that reason such questions seem to express norms more than actual behaviour.

Niemi (1993) also distinguishes between random errors arising from unclear questions, deterioration of the interviewees' motivation or attention and systematic errors depending on the population group, and, finally, measurement errors, i.e. in the understanding of the question, ability to provide information, willingness to cooperate and to give an honest answer.

Information on paid working hours in time-use surveys are adopted following the formulations used in Labour Force Surveys questionnaires, which is in accordance to the recommendations from Eurostat (2000) aimed at making comparisons on different labour market issues exercising different data-sources – European Community Household Panel, Household Expenditure Surveys, etc. In these surveys the questions are about the weekly number of working hours in an ordinary job, in a secondary job and the number of monthly hours spent on overtime. In most countries this information is gathered on an annual basis and international comparisons are therefore possible, and the same applies for analyses of the development in paid work over time – even though LFS's are cross-sectional not longitudinal surveys. The drawback is that daily variation in working time, sickness, holidays, etc. are not delimited by using this data-collection technique.

Table 1. Paid work

QUESTIONNAIRE-INFORMATION	DIARY-INFORMATION
IP is asked about his/her own paid work and his/her spouse/cohabitants	IP and spouse/cohabitant (partner):
# weekly hours in primary occupation	# 10-minute intervals of work
# overtime hours per month	# 10-minute intervals of commuting
# hours in secondary job per week	1 weekday and 1 weekend day (randomly chosen)
# minutes of daily commuting time	Split sample (½ spring, ½ autumn)

Table 2. Unpaid/household work

QUESTIONNAIRE-INFORMATION	DIARY-INFORMATION
<p>IP is asked about his/her own, his/her eventual spouse's/cohabitant's, his/her children's and others</p> <p>(1) participation in 9 different household activities and</p> <p>(2) # hours per week spent on these 9 activities taken together</p>	<p>IP and spouse/cohabitant (partner):</p> <p># 10-minutes intervals of different household activities</p> <p>1 weekday and 1 weekend day (randomly chosen)</p> <p>Split sample (½ spring, ½ autumn)</p>

In diaries paid work and unpaid work rely on information gathered from 10-minute intervals during a weekday and a weekend day. In the Danish Time-use survey the diary is self-administered as the respondent fills it out either during the present day or ex-post, the method chosen stated in the end of the diary. The diary includes questions on primary activity, secondary activity, a location question and a “with-whom” question, where the first ones are open-ended, the respondent being asked to use his/her own wordings, whereas the “with whom” question is pre-coded giving some optional categories. Following the guidelines from Eurostat (2000), the activities are afterwards coded on a three-digit level by professional coders.

The advantage of time-diary information is first of all that very complex information is provided in a very flexible way. Every moment during the day – sequence - is in focus, treating the respondents equally in respect to time and getting the sequences mutually exclusive, as only one main activity is assigned to one sequence. However, the inclusion of space for secondary activities (which is the case in some diaries) is found to reduce the occurrence of short-term “interruption” activities, which otherwise are registered as main activities (Kitteroed, 2001). Furthermore, diaries filled out the present day are more reliable than retrospective diaries (Robinson, 1985), just as the day referred to influences the quality of the information, as “typical” weekdays are found to become less reliable than “atypical” weekend days (Kalton, 1985). The major drawback concerning the diary method is, however, that not all weekdays are recorded for every respondent in most time-use surveys, which is why a weighting procedure

calculating “synthetic” weeks has to be applied (see below) to take the weekly variations into consideration.

In the Danish time-use questionnaire information on household work was also gathered. Thus the respondent was asked about the different household members’ - adults and children - participation in 9 explicitly mentioned tasks - shopping, visiting public offices etc., food preparation, washing up and table clearing, cleaning, washing, gardening, repair & maintenance and bringing and collecting children - and the aggregated time they spent on these tasks. The definition of household work is in agreement with the practice in other time-use surveys and follows the recommendations for future European time-use surveys (Eurostat, 1997).

It is the respondent who fills out the questionnaire, therefore, information on spouses and child(ren)’s household work will rely on her/his information. A comparison between two Swedish studies (Qvortrup, 1994) shows, however, that there is no significant difference in the workload or in the distribution of the workload between girls and boys, whether the parents or the children themselves give the information. We will investigate here *If information given on the spouses time-use is reliable* too.

Furthermore, use of a questionnaire (and not a diary) means that household work is measured as a given number of hours per week and refers to an ordinary week. For comparative reasons the diary concludes with a question about how normal the interview-day was – rather normal, rather un-normal – and only replies of the first category are taken into consideration here.

The most important argument for utilizing questions in the Danish Time-Use Survey is that this allows for comparisons with corresponding diary-information⁵. In case no differentials appear concerning the average and the variation in time spent on household work, the questionnaire technique offers a cheaper way of gathering overall time-use information, and, thereby, the opportunity to include these questions in future surveys. In the European Community Household Panel (ECHP), which is a panel-survey conducted since

⁵ In Finland the Labour Force Survey for the year 1979 included a time-use study/diary allowing for a similar simultaneous comparison. However, only time spent on paid work was conducted by both techniques (Niemi, 1993). Press & Townsley (1998) make an inquiry about simultaneous information on unpaid work the absence of which enforces themselves to use more sophisticated methods - a tobit-model - to solve the comparison problem.

1994 in most European Countries including all 16+ years-old household members, the two above-mentioned questions have already been included in the 1994 and 1998-waves for Denmark. Also the American National Survey of Families and Households (NSFH) includes questions on household work for the years 1987-88 and 1992-94, and in the on-going 2001-2002 surveys. Here the respondents have to reply on time spent (on a weekly basis) on nine different household tasks – preparing meals, washing dishes and cleaning up after meals, cleaning house, outdoor and other household maintenance task, shopping for groceries and other household goods, washing, ironing, mending, paying bills and keeping financial records, automobile maintenance and repair and driving other household members to work, school, or other activities – which in comparison with the corresponding Danish questions only vary slightly. The household members refer to the respondent her-/himself, the husband/wife, others under age 19 or 19 years and above. The implication is that time spent on household work by Americans become comparable to time spent by Danes, because of the parallel information techniques used.

The two different time-use indicators derived from the Danish time-use survey questionnaire and diaries, respectively, are to be *tested concerning differentials in overall averages and variations*. If questionnaire information is called (QI) and diary information (DI) the dependent variable becomes:

$$\text{DIFF} = \text{QI} - \text{DI},$$

where DI is calculated as group information by estimating “synthetic” workweek volumes: each group is weighed to get the same distribution of days of the week.

For obvious reasons the variation of the DI-information becomes much greater than the variation of the QI-information, whereas the mean differentials in time spent on paid work and unpaid work are more difficult to predict. Robinson (1985) and Gershuny & Robinson (1994) argue that more paid work is registered by exercising the questionnaire technique than the diary technique because informal breaks - private telephone calls, rests, socializing with colleagues, etc. – are more prone to appear in the latter than in the former technique, and what is more decisive, sickness and holidays are straightforward information in diaries, whereas these phenomena require separate questions in questionnaires. On the

other hand most diaries include primary activities as well as secondary activities leaving the latter category for short-term activities and the former for more thorough activities, see Kitteroed (2001). If only primary activities are referred to this might reduce the paid work differentials to be found between the two techniques.

The same argument for using only primary activities in diaries when comparing the amount of time spent on household work with the findings from questionnaires is assumed to hold. However, even in this case it seems to be an open-ended question which of the two data-collection techniques may contribute most to average time spent on household work⁶.

III. Analyses

Paid work

The relationship between the calculated number of hours in the diary and in the questionnaire is the central issue to be addressed. That is, if the time spent on the labour market differs significantly on an aggregate level and/or the distribution of time in different dimensions varies, there might not be complete substitution between the two sources and the results of analyses thus depend on the dataset applied.

Table 3 shows that less time is devoted to paid work when information relies on questionnaires than on diaries. However, the differential is very modest amounting to only minus 1 minute or 4 per cent of the information given by the survey.

⁶ Press & Townsley (1998) find significant differentials in the amount of unpaid work comparing data from the National Survey of Families and Households and the American' Use of Time, respectively. Unfortunately, they do not investigate why this happens, as their aim is to analyse why gender differentials in what they call over-reporting, i.e. DIFF, appear.

Table 3. Paid-work comparisons by workload categories

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
0 hours	1093	0	-7.48	..
1-19 hours	30	11.30	-12.01	-106
20-24 hours	37	21.30	-3.51	-16
25-29 hours	65	26.80	1.01	4
30-34 hours	143	31.44	2.33	7
35-39 hours	1004	36.96	3.73	10
40-44 hours	134	40.88	2.95	7
45-49 hours	108	46.26	8.05	17
50- hours	124	59.65	13.30	22
Overall average	2738	22.77	-0.85	4

Note: DI, only primary activities

Another finding is that the distribution of paid work varies according to the level of this work. For 0-working people the actual number of hours worked is around 8, which may be due to the routing in the survey, which does not allow self-categorized unemployed and non-employed people to have primary jobs. The interesting finding is thus the discrepancy (DIFF) between the declared number of hours (QI) and the actual number of hours (DI) of ordinary working people. Here we find a significant increase of DIFF from minus 12 hours to plus 13 hours a week indicating that people with a small labour supply actually work more hours than they report and for people with a great labour supply the actual number of hours is smaller than what they report. Relative deviances give the same results (table 3), i.e. splitting up into women and men a gendered pattern appears with a more pronounced relationship for women than for men (3.98x-19.02 and 2.99x-8.68, respectively). This is in accordance to the findings of Robinson & Gershuny (1994) who in a similar methodological investigation found that short-term involvement in paid work takes a shorter time when measured by survey questions than by diary entries, and the opposite holds true for long-term involvement.

Table 4. Paid-work comparisons by age

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
16-19 years	234	7.53	-3.62	-48
20-24 years	286	17.80	0.51	3
25-29 years	362	25.34	0.04	0
30-34 years	236	31.11	2.13	7
35-39 years	279	30.23	1.67	6
40-44 years	248	32.65	0.42	1
45-49 years	262	31.21	0.84	3
50-54 years	232	29.08	-4.27	-15
55-59 years	214	25.81	-2.15	-8
60-64 years	175	9.04	-1.27	-14
65-69 years	130	2.92	-3.29	-113
70-74 years	61	0.00	-2.73	..

Note: DI, only primary activities

The age of the respondent also influences the outcome of using diaries versus questionnaires on the issue of time spent on paid work (table 4). There is thus a tendency towards an underestimation of working hours with older people being the most unrealistic and younger people being more accurate about their working hours – excluding teenagers who also under-evaluate significantly. Furthermore, men report less paid work than women, if the information derives from questionnaires relative to diaries, which is similar to the findings of Niemi (1993), who found that women significantly over-evaluate the hours worked on the labour market whereas no differential was found for men. A plausible explanation is that men have more flexible jobs and do not care so much about the number of working hours for which reason their judgements become more unreliable. Thus it is probable that men count work-periods less accurately and find work less demanding than do women, who more often have fixed working hours, more responsibilities for the family and more time devoted to domestic work.

Another investigation (Niemi, 1983; 1990) finds that also occupation matters for the discrepancy in time spent on paid work, civil service workers and self-employed reporting much more in the questionnaires than in diaries, relative to ordinary workers. If and how this might contribute to the findings here making women more reliable than men in giving information about the numbers of hours spent on paid work is an open-ended question.

Table 5. Paid-work comparisons by sex

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
Women	1412	20.56	-0.06	-0
Men	1326	25.13	-1.95	-8

Note: DI, only primary activities

Unpaid/household work

Relative to paid work time spent on unpaid/household work is constituted by several short lasting episodes which might make it difficult to aggregate accurately in questionnaires for which reason diary information a priori might be a more reliable measurement. Furthermore, the retrospective character of survey information implies more uncertainty, which is why most studies assign more reliability to diary-information than to questionnaire-information, see Niemi (1993), Marini & Shelton (1993) and Press & Townsley (1998).

The size of the differential in unpaid work between the two methods exercised is shown in table 6. In accordance to most others findings the questionnaire approach gives less reported household work than the diary approach. Where the first method implies an overall average of 12.3 hours of work the latter implies 19.6 hours of work during a week.

The variations in terms of standard errors of these figures cannot be measured because of the estimation procedure, but aggregated differentials can be demonstrated for relevant socio-economic variables.

Firstly, a minor gender gap is found in reported household work, men's questionnaire information being closer to their diary information than is the case

for women. Where men “only” underreport 6.5 hours a week, women underreport 7.7 hours a week (table 8). However, if the differentials are measured as relative deviances, women are more accurate than men in reporting hours spent on household work, i.e. 52 per cent relatively to 66 per cent. There is thus no strong evidence of a gender bias in the measurement of household work. This is because on the one hand women are expected to have more information and dedicate more attention to this work and thereby become more accurate in their judgement of hours worked, and, on the other hand, that women spent more time on domestic work than do men, the implication being that women become more unrealistic about their work supply (Press & Townsley, 1998). The latter explanation is partly confirmed in table 6, where the relative deviances – the percentage differentials - are found to decrease up to 30-34 hours, after which the level increases among the very domestically active. However, in absolute terms the tendency is much more moderate, as a labour supply up to 24 hours a week is equal to overestimates of 5-10 hours, and 25+ hours per week begin with a small deviance leading to the biggest differential among the 40+ working people, i.e. the 0-hours left out of consideration.

Table 6. Unpaid/household-work comparisons by workload categories

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
0 hours	33	0.00	-15.62	..
0-4 hours	506	2.61	-9.71	-372
5-9 hours	602	6.51	-9.55	-147
10-14 hours	683	11.44	-8.32	-73
15-19 hours	268	15.60	-5.79	-37
20-24 hours	331	20.50	-5.06	-25
25-29 hours	111	26.32	-3.32	-13
30-34 hours	86	30.01	1.78	6
35-39 hours	45	35.62	5.47	15
40- hours	48	47.54	16.21	34
Overall average	2713	12.31	-7.25	-59

Note: DI, only primary activities

The differentials found are more pronounced for women than for men (the curve-linear relationships are $.54x^2-2.48x-8.04$ and $.51x^2-1.71x-6.73$, respecti-

vely) when leaving 0-hours respondents out of consideration.

Also gender attitudes are supposed to influence the differentials found between questionnaire and diary information. Press & Townsley (1998), who confirm this thesis, argue that such attitudes are correlated with age and education, as “more educated and younger husbands are likely to feel the pressure to do more housework and/or over-report their housework contributions” (p.192), while for younger women egalitarian attitudes and norms together with paid work on equal terms with men imply more accurate judgements than among older women. The age-correlation is confirmed in table 7, which shows that under-estimation is lower among younger persons than among older persons in absolute terms as well as in relative terms, the deviances being moderate in both cases.

Table 7. Unpaid/household-work comparisons by age

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
16-19 years	231	3.94	-6.04	-153
20-24 years	285	8.21	-4.77	-58
25-29 years	359	11.32	-4.19	-37
30-34 years	234	14.71	-5.87	-40
35-39 years	279	15.60	-6.41	-41
40-44 years	247	15.04	-7.84	-52
45-49 years	257	12.78	-9.35	-73
50-54 years	232	13.02	-7.12	-55
55-59 years	211	12.54	-8.68	-69
60-64 years	172	15.00	-9.44	-63
65-69 years	127	15.74	-10.58	-67
70-74 years	60	15.58	-9.24	-59

Note: DI, only primary activities

Finally, the presence of children also affects the reporting pattern, with mothers under-reporting less than fathers in relative terms, whereas no differential appears in absolute terms (table 8). Press & Townsley (1998) also find that women over-report relatively to men, and argue that this is because the social expectations are still gender specific in the way that mothers are obliged to take more care of the family than the fathers.

Table 8 Unpaid/household-work comparisons by sex

QUESTIONNAIRE INFORMATION	N:	GROUP AVERAGE	DIFF. (QI-DI)	
			Hours per week	Per cent
Women	1395	14.72	-7.68	-52
- with children	536	19.37	-6.81	-35
- without children	859	11.81	-8.45	-72
Men	1318	9.77	-6.47	-66
- with children	416	11.70	-7.06	-60
- without children	902	8.88	-6.24	-70

Note: only primary activities

Cross-partner information on work

From the methodological literature we know that information on peoples behaviour depends on who reports. That is, if the respondent is interviewed about own behaviour the information might *ceteris paribus* become more reliable than information obtained by other persons being spouses or children. Second-hand knowledge thus relies on registrations as well as on expectations and norms, which in the case of paid work might appear as a mixture of the time the spouse actually is away from home and the time the spouse wishes to spend together with him/her. Information on the amount of unpaid work performed by the husband and/or the wife is also supposed to depend on whether the respondent is referring to themselves or their spouse.

Table 9. Cross-partner information on paid work in questionnaires

	RESPONDENT:	
	Husband (N=1078)	Wife (N=1066)
	Hours per week	
<i>Paid work</i>		
Husband	27.97	28.72
Wife	23.96	24.10
<i>Unpaid/household work</i>		
Husband	10.75	10.82
Wife	16.28	16.92

In the Danish time-use survey, however, no cross-partner discrepancies about time spent on paid work and unpaid work is found, regardless of whether the wife or the husband is the respondent (table 9). It is not possible to conclude if this conceals diverging effects, but it raises the question if data-collections can do with fewer respondents if cross-partner information is included.

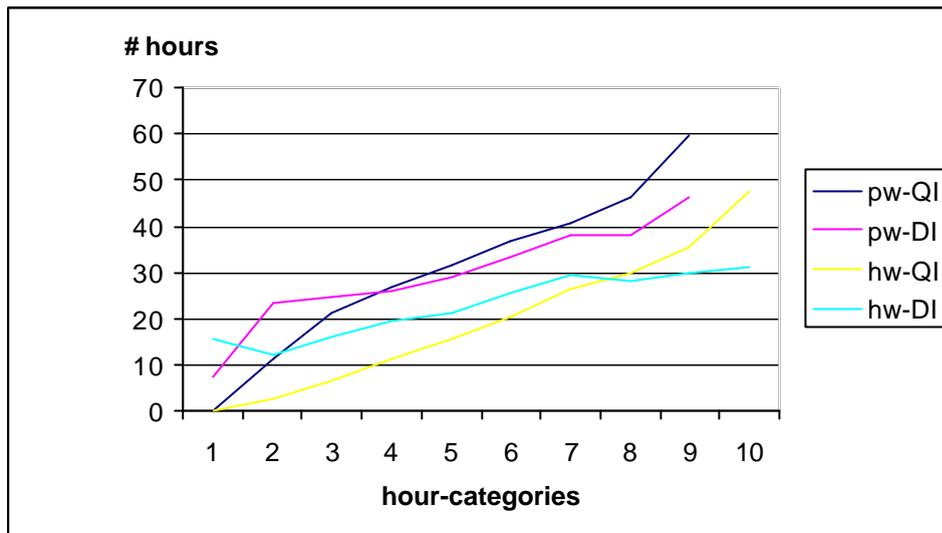
Conclusion

There seems to be an agreement among researchers that diary information on time use is more reliable than questionnaire-based information. Attitudes and norms are assumed to influence the information people give in questionnaires, whereas the consecutive structure of a diary properly leaves out this kind of measurement error. Unfortunately, the diary method is much more expensive to employ than ordinary questionnaires for which reason the latter is the most frequently applied information source when gathering information on paid work, the Labour Force Surveys being a prominent example. On the other hand information on unpaid work usually rely on diaries and thus appear seldom and infrequently.

In the Danish time-use survey information on paid work as well as on unpaid work is gathered for the first time by employing diaries and questionnaires concurrently to test if the two techniques are equally appropriate for delivering data for comparative time-allocation research purposes.

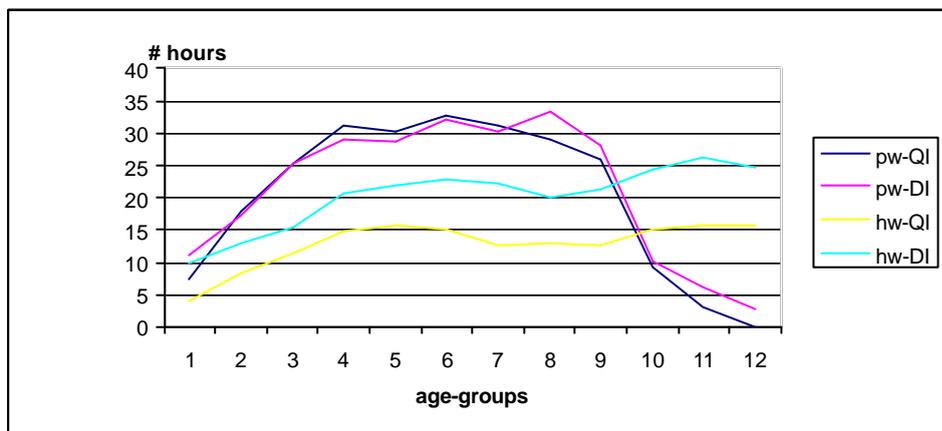
The conclusion to be drawn is that information on paid work on the general level does not depend on the measurement technique applied, whereas questionnaire information on unpaid work highly underestimates the time spent on this activity one explanation being that many short-term tasks are involved. The variations for both kind of work are strongly dependent on the measurement technique. This holds for the labour supply, where people reporting many hours of paid work over-evaluate the actual number of hours worked, and people reporting only a small number of hours worked, on the contrary, under-evaluate their contribution to the labour market. For unpaid work the same pattern appears, if controlling for the general under-evaluation of this work, i.e. the higher reported contribution to the household production the more under-evaluation is found (figure 1). The consequence is that the slopes of the “diary”-curves are less steep than those of the “Questionnaire”-curves, and the former more equal to each other than the latter.

Figure 1. Paid- and unpaid-work comparison by workload according to hour categories¹



¹pw-QI: $6.55x - 2.22$, $R^2 .97$. pw-DI: $3.89x + 10.09$, $R^2 .91$.
hw-QI: $5.01x - 7.92$, $R^2 .98$. hw-DI: $2.19x + 10.98$, $R^2 .92$.

Figure 2. Paid- and unpaid-work comparisons by workload according to age-categories¹



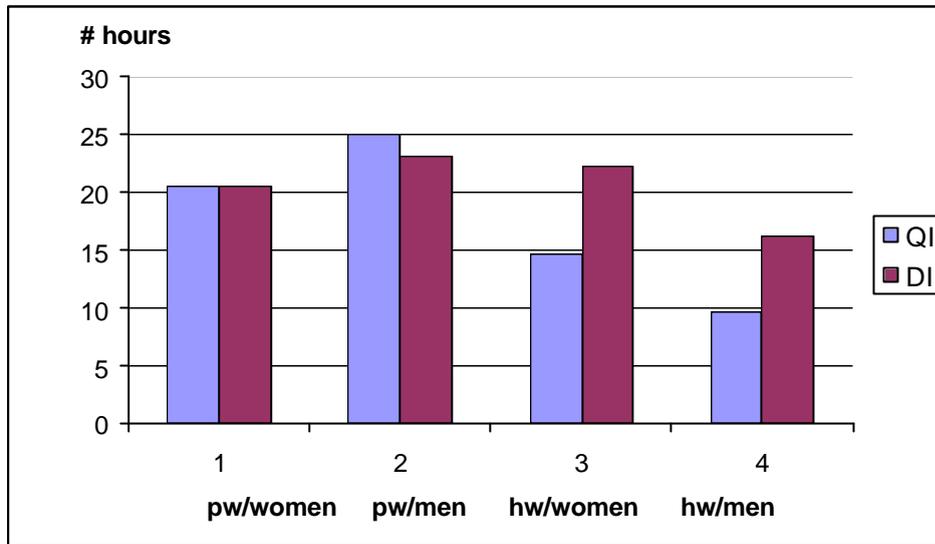
¹pw-QI: $-.99x^2 + 11.58x - 1.51$, $R^2 .94$. pw-DI: $-.89x^2 + 10.57x + .70$, $R^2 .91$.
hw-QI: $-.14x^2 + 3.06x + 8.10$, $R^2 .86$. hw-DI: $-.14x^2 + 2.56x + 3.89$, $R^2 .70$.

The age of the respondent also influences the discrepancies between reported and actual time spent on household production, as a u-shaped relationship is found more pronounced for questionnaire information than for diary-information. For paid work, however, no differentials are found among age groups applying the two techniques, i.e. in both cases very marked u-shapes appear (figure 2).

Finally, men underestimate the time spent on unpaid work more frequently than women, and fathers more than mothers, while no significant gender

differential appears concerning the estimation of paid work (figure 3).

Figure 3 Paid- and unpaid-work comparisons by sex



The conclusion therefore is that it matters if questionnaires or diaries are used when measuring time spent on paid and unpaid work. However, as the relative positions of the different categories are changed only in a few cases, structural analyses on questionnaire-based data on time-use are feasible and reliable even though the relationships may become too easy to prove statistically. The implication is that even though these analyses might be done with caution, they allow for more comparative time-allocation research and the inclusion of time-use questions in different surveys, whereas descriptive statistics about the distribution of time within different populations still have to rely exclusively on diary-information.

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