



The Lifestyles of Working Parents: Implications and Opportunities for New Technologies

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technologies

This report summarises an in-depth investigation into the lifestyles of working parents taking into account both their home activities and their work activities, and how these are part of a complex lifestyle in which family and work commitments are met. We look at their patterns of mobility, stresses and strains, use of technology, home-work crossover, and domestic routines, as well as examining some aspects of their lives more closely such as the ways in which they use artefacts in planning and reminding and in household communication. Through this, we begin to focus on potential technological opportunities for HP, and point toward more in-depth research that needs to be carried out to understand the requirements for such technologies. Apart from the Introduction (Section 1) and Method (Section 3), any of the other sections in this report can be read as stand-alone topics. For the reader who wants a succinct summary of the main findings, and the implications of those findings, skip directly to Section 13.

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Abstract

This report summarises an in-depth investigation into the lifestyles of working parents taking into account both their home activities and their work activities, and how these are part of a complex lifestyle in which family and work commitments are met. We look at their patterns of mobility, stresses and strains, use of technology, home-work crossover, and domestic routines, as well as examining some aspects of their lives more closely such as the ways in which they use artefacts in planning and reminding and in household communication. Through this, we begin to focus on potential technological opportunities, and point toward more in-depth research that needs to be carried out to understand the requirements for such technologies.

Apart from the Introduction (Section 1) and Method (Section 3), any of the other sections in this report can be read as stand-alone topics. For the reader who wants a succinct summary of the main findings, and the implications of those findings, skip directly to Section 13.

1. Introduction

Many traditionally business-oriented IT companies are waking up to the fact that new technologies originally developed for working life are gradually and inextricably infiltrating the home environment. As people become increasingly dependent on technology for their working lives, they begin to envision ways in which they can use these devices and services outside work. In the 1990s, we saw the PC and the Internet find an important place in people's homes. Likewise, in the last few years (at least in the UK) the mobile phone has found its way not only into people's briefcases, but also into their cars, handbags and even schoolbags.

As researchers and developers, we can continue to take advantage of this incidental uptake and hope that the technologies we develop will suit the home environment as well as the work environment. Alternatively, we can choose to design and conceive of new technologies which are not only aimed at the home consumer, but which recognise the fact that most people (even in today's tough times) have a working life *as well as* a home life. Furthermore, with the proliferation of new devices and services, especially mobile ones, we need also to recognise the fact that people may not necessarily want to have to buy, learn to use, carry and keep more technology than they really need. Technologies which support people's whole lifestyles, rather than supporting the confines of work, or of home, may therefore offer more integrated, flexible solutions to support the complex needs of people in seamless ways.

"Lifestyle" research is a new buzzword that is gaining prominence in many industries in the IT sector. For example, the mobile phone operators increasingly see an understanding of people's lifestyles as key to developing innovative new products and services. They are recognising that the mobile phone can no longer be classed either as solely a business or a consumer product, and furthermore, that different segments of the user population use these products, and make decisions about buying them, in very different ways. Such segmentation is often done on the basis of either marketing brainstorming techniques, or on the basis of large user surveys that aim to identify the key dimensions along which the user population may be segmented.

The difference between that kind of lifestyle research and the research reported here is that we aim not only to define the key characteristics of a set of users through techniques such as questionnaires, but also to use more in-depth techniques to understand the day to day detail of the lifestyle of particular user groups. Thus, large sample data collection techniques are supplemented and enriched through the use of other methods such as open-ended interviews as well as diary techniques in which we record and unpack the detail of actual events in the lives of our users. These details, combined with larger sample statistics, are used to help us draw inferences about the kinds of new technologies that these particular target users might welcome or need, as well as to help us decide which kinds of technologies would *not* find a place in their lifestyles or in their home and work patterns.

1.1 Why Working Parents?

The choice of working parents for this research was primarily based on our desire to select a segment of the population who are first, highly mobile, and who second, have complex and demanding work and home lives. The reason for this was that we are not only interested in the potential for mobile devices and services (and thus people who are mobile), but also we wanted to start with a segment of the population who would bring to the fore some of the issues that are raised by people who need to find ways to cope with the interplay of home and work. Working parents satisfy both requirements in that we suspect they are highly mobile both for work, for home, and in the transition between work and home. They also must find ways to deal with the heavy demands that work and home life place on them. This may include both intermingling home and work activities, as well as partitioning them. By understanding the tools and strategies they use to cope with these demands, and by understanding the nature of their day to day lives, we might see opportunities to improve existing technologies, or see opportunities to invent new ones. Of particular interest is a deeper understanding of what working parents' needs might be while mobile, because of the emphasis at HP Labs on the use of pervasive and mobile technologies.

A second reason for looking at working parents is that they constitute an increasing proportion of the workforce in both the UK and the US. For example, in the UK, composition of the workforce has changed significantly over the last 30 years. In particular, more women have entered into employment. Statistics provided by various governmental and non-governmental agencies (e.g. Hatten et al., 2002; Office for National Statistics, 1997, 2000) show that more women of working age are in employment now than ever before. In 1971, 56% of women of working age were economically active (in work, or seeking work); by 1999, this figure had risen to 72%. Much of this rise in participation in the workforce has come from increasing numbers of married or cohabiting women working (Office for National Statistics, 2000; Labour Force Survey, 1999). Increasing proportions of mothers work full time; in fact, the rate of employment has risen most quickly amongst mothers of young (pre-school) children (Kay, 1998; Brannen et al., 1997). Furthermore, women's part time hours are longer than ever before (Hatten et al., 2002). While fathers' working hours also increased in the period studied, women's showed a greater increase. A study in 1999 found that 59% of married or cohabiting mothers with pre-school age children were in employment (Labour Force Survey, 1999); another that more than a third of mothers aged between 25-34 returned to work within a year of having their first child, compared to one in seven of those now aged 60-64 (Office for National Statistics, 1997). Thus, if these figures are indeed pointing to an ongoing trend, we are looking at a future in which an ever bigger segment of the population consists of households in which both parents work.

2. Existing Research

In the sociological, anthropological, and psychological literature, the topic of working parents has been researched quite widely. For example, since the last decades of the last century, large bodies of research have been devoted to investigating the changed and changing roles of women in the home and the workplace, as more and more women in western societies undertake paid work outside the home (e.g., Hatten et al, 2002; Office of National Statistics, 1997; 2000). Research has looked at when and why women work (e.g., Labour Force Survey, 1999; Office of National Statistics, 2000), and has investigated the consequences of women's changed roles for men at home and at work (e.g., Reeves, 2002). The sharing and division of unpaid domestic work at home, the management and carrying out of parental responsibilities, the amount and nature of leisure time reported by mothers and fathers are amongst substantial bodies of work (e.g. Brines, 1994; Burgess, 1997; Reeves, 2002). There are also large bodies of research looking at the effects of cultural and organisational attitudes, practices and behaviours upon men and women in the workplace, particularly upon parents (e.g., Townsend, 2001).

The available UK research indicates a picture in which the majority of women are now engaged in paid employment, and are working, like men, longer hours than they did 30 years ago. When they become parents, they often reduce their working hours, while men maintain or increase theirs, and this change of working pattern is a cultural norm, often reinforced by, and in turn reinforcing workplace inequality. By default, in general, women have the primary responsibility for domestic work including childcare, with their husbands contributing more time than they used to, but in the role of 'helpers' to their wives. While men generally agree that it is desirable that they do more domestic work, and women are generally not satisfied that the major burden is theirs, equal responsibility is a goal that still seems very far away. There are similar findings for the USA (Townsend, 2001; Greenstein, 1996; Demo & Alcock, 1993; Townsend & O'Neil, 1990; Hill et al., 2001).

Heavy demands in both the work and home spheres inevitably have crossover or "spillover" effects into each domain. A study in the USA (Barnett, 1994) found both positive and negative effects from one domain spilling over into the other. This was affected by the degree of control and flexibility the individual has over each domain. When there is little control and flexibility in time and place over carrying out work and family responsibilities, work-to-home spillover tends to be negative (including increased marital conflict, less knowledge of children's experiences, and depression); negative home-to-work spillover also occurs (including reduced job satisfaction, reduced quality of working life and increased absenteeism). By contrast, flexible working conditions are associated with positive work-to-home spillover (see also Bond et al. 1998). Other studies have found the spillover effect to be asymmetric: that is, that there is a stronger effect of spillover from work-to-home than of home-to-work (Leiter & Durup 1996; Bolger et al., 1989). Research has also demonstrated that this relationship is not gender-specific, but affects both men and women (Milkie & Peltola, 1999). However, a study in the USA (Janning, 2000) found that men were more likely to have work activities intruding into the home, and women to have home activities intruding into work.

Such research looking at the demographic, sociological, and cultural issues of working parents provides important background reading to understand the broader context of this segment of the population and how it has changed in recent times. However, this research does not generally look at the role of technology within the lives of working parents. Furthermore, while there is research that does look at societal trends around certain kinds of technologies (and even technology in the household, e.g., Gumpert & Drucker, 1998), it is rarely focussed on working parents, and in any case does not consider the implications of these findings for the design of new technologies.

For research that does look at the role of technology in people's lives with an eye toward either improving that technology, or discovering opportunities for inventing new devices and services, the most relevant fields of study are Human-Computer Interaction (HCI) and Computer-Supported Cooperative Work (CSCW). However, in both fields, the vast majority of the literature has looked at work activities and environments, and the implications of these findings for the design of work-related technology.

More recently, however, there has been new interest in applying both HCI and CSCW techniques to the home domain (e.g., Hughes et al., 1998; Kraut et al., 1996; O'Brien and Rodden, 1997; Plaisant et al., 2002; Ventakesh, 1996). Some have looked at how particular kinds of technologies are used or not used in home environments. This includes conventional technologies such as the television and the PC (e.g., Graves Petersen et al., 2002; Kraut et al., 1996) as well as new ones such as digital picture frames, and set-top boxes (e.g., Mynatt et al., 2001; O'Brien et al., 2000). Some have used participatory design methods to develop new concepts for home environments (e.g., Hindus et al., 2001), and others have been ethnographic studies of home life with implications for new kinds of technology (e.g., Hughes et al., 1998).

Another relatively new topic of investigation has been that of mobility, and the implications of studying what people do when mobile for new kinds of devices and services. Two recent books provide good overviews of the topic (Brown et al., 2001; Katz and Aakhus, 2002). Much of the work that has been done centres on the use of the mobile phone either for work purposes (O'Hara et al., 2001; Perry et al., 2002; Sherry, 2001), or the use of the mobile phone for social talk and text messaging, particularly with regard to use by teenagers (Green, 2001; Taylor & Harper, 2001, 2002; Ling & Yttri, 2002). Yet other studies shed light on some of the cultural differences in the use of the mobile phone. There are studies of mobile phone use by Finns (Puro, 2002; Kopomaa, 2000), and contrasting cultural differences between the USA and the Netherlands (Mante, 2002, Katz 1999). Other research has emphasised the use of the mobile as a form of social flânerie: a kind of performance or a way of behaving that is intended to draw attention to oneself. This appears to be an important factor determining mobile phone use both in France (De Gournay, 2002; Licoppe & Heurtin, 2002) and in Italy (Fortunati, 2002).

As we have seen, then, research with an eye to the design of new technologies, or evaluating technology in use, therefore, has tended to be situated either within the confines of home, of work, or in mobile situations. Very little research has actually looked at the role of technology or artefacts by working parents, or more generally

across home-work boundaries. There are, however, some exceptions which deserve mention: A book by Nippert-Eng (1996) outlines how people construct boundaries between home and work, how they transition between them, and how everyday artefacts (including technology) help to either segment or integrate these aspects of life. In other words, people bring work artefacts into the home, or home artefacts into work, but they may also segment home and work by using different objects for each sphere of activity (e.g., keys, calendars, wallets, purses and even clothing). In another study, an ethnographic investigation of fourteen dual-career families in Silicon Valley (Darrah et al., 2001) looked at how these families juggled home and work responsibilities and how technologies played a role in this. One of the topics that comes to the fore is how time management is achieved in the family. Indeed they go so far as to claim that the need to plan, prioritise and negotiate activities within the family are defining features of family life. Finally, a doctoral thesis by Fleuriot (2001) again focuses on the problem of time management, looking in particular at how this is achieved in working families through strategies and tools.

The study reported here therefore adds to a very small collection of research on working parents, their activities in home, work and mobile contexts, and the ways in which tools, technologies and strategies support the complex interweaving of these activities and spheres of life.

3. Method

The study is best described as consisting of three phases: a pilot phase, a questionnaire phase, and an interview phase (this latter phase including the use of diary techniques to gather detailed data about actual events). We felt it important that any quantitative data be enriched and explained through detailed interviews about actual activities with a sample of these working parents. Likewise, we wanted to be able to generalise and look more broadly at trends and issues by examining a larger sample of people whose responses could be quantified and analysed. Unlike the interview data that was aimed at grounding discussions in actual, recent events, the questionnaire data was designed to give us a complementary set of overall perceptions and opinions from a larger sample of people.

Criteria for participation throughout all phases were threefold:

- Participants had to be married or cohabiting (i.e. not single parents).
- Participants needed to have at least one dependent child living at home.
- Both parents in the household needed to work a minimum of 20 hours a week.

3.1 Pilot Interviews

We began the study by interviewing eight working parents in order to begin to gather a first hand sense of the key issues that would arise in subsequent data gathering. To ground the development of our questionnaire, we interviewed four working mothers

and fathers from four different families, individually, two married or cohabiting couples together. Interviews were between one and two hours in duration and were conducted in places chosen by the interviewees: either the home of the interviewer or the interviewee(s), or in one case, in the workplace. In all cases we chose people we knew (either friends, neighbours, colleagues or family members).

These interviews were exploratory and open-ended, with the principal foci in several key areas. Family demographics included: number and ages of children; the nature of work carried out by the mother and father, their working hours and conditions; domestic routines (who does what); transportation and getting about; and relaxation times and activities for individuals and the family as a whole. Other domains covered were: satisfactions, pleasures, concerns, stresses and problems of day-to-day life. We also investigated the technologies, artefacts (e.g. paper based lists and diaries) and methods (e.g. keeping things in specific places as memory prompts) parents and families used to help coordinate and manage their individual and family commitments, and to help them communicate with each other, directly or indirectly.

3.2 Questionnaire

The pilot interviews were summarised and used as the basis for designing the questionnaire, which was developed iteratively, being administered first to 5 pilot volunteers, and then modified to shorten and clarify the questions. The final version of the questionnaire took about 30 minutes to complete.

The final questionnaire (a copy of which can be found in the Companion Report¹) was divided into seven sections dealing with:

- general introductory information about the respondent and his/her family (family demographics and the modes of transport used);
- the respondent's work;
- the respondent's spouse or partner's work;
- domestic tasks and routines;
- home and work responsibilities and their segregation and/or integration;
- everyday stresses and strains; and
- the respondent's use of objects, services and technologies.

In total there were 62 questions, some of which were optional. Questionnaire items took one of several forms:

- Unconstrained answers. For example, respondents were asked to describe the work they do. They were also asked what an "ideal technology" might do for them. (Examples: 2.1 and 7.12.)
- Questions answered by the use of Likert type scales. The scale associated with each question had two terminal points or anchors (e.g. "extremely stressful" at one

¹ See Shaw, K., Beech, S., Geelhoed, E., Murphy, R., Parker, J. & Sellen, A. (2003). "The Lifestyles of Working Parents: Companion Report", HPL Technical Report.

end “not at all stressful” at the other; “highly routine” at one end, “not at all routine” at the other.) Respondents indicated on the scale the degree to which the question was, in their case, described by the word or phrase at each end of the scale. As our questionnaire was designed to be administered to a respondent group that was diverse in its characteristics (for example, the parents of dependent children of all ages, and many different occupations), not all questions would be relevant to all respondents. We therefore included filters, asking that respondents indicate when a question was not relevant to them, and bypass that scale. (Examples: 5.1 – 5.5.) There were also occasions when we provided scales with the appropriate anchors, and left the questions or statements for the respondents to fill in. (Examples: 6.1 and 6.2). We did this when we anticipated that respondents might have answers or observations that were not already in the questionnaire.

- Questions with check boxes. Check boxes were mainly used when we needed quantitative data, such as how many hours a week parents work, or how frequently a particular activity takes place. They were also used when we wanted to give respondents a choice of statements, one of which they needed to select as most true of them. Finally, they were used extensively in the technology section, when we needed to find out which technologies, artefacts or methods people use, and for what purposes they use them.
- Tables. There were several instances when respondents could give multiple answers to a question. (Examples: 1.6, 1.7, 7.1 and 7.10) In such cases, respondents were asked to place ticks in the appropriate rows and columns of the table grid.

Participants were recruited for the questionnaire through one of three methods:

- An email was circulated to the Bristol offices of HP (the research labs and engineering and support functions and some ancilliary functions) asking colleagues to act as intermediaries for us, by recruiting a friend or family member who was not an HP employee to participate in the study.
- A poster was placed in a local nursery advertising the studies, and questionnaires were left there.
- An advertisement was placed in the magazine of a local school.

Through these means, we recruited 64 questionnaire participants: 40 women and 24 men. Participants were paid £5 for completing the questionnaire. Payment was in the form of vouchers, and participants could choose between vouchers for books, recorded media and good from a high street chemist.

All participants were briefed on the front page of the questionnaire, which explained the study’s purpose and its scope, guaranteed confidentiality and anonymity when the data were analysed, and gave instructions for completing the scales. Questionnaire respondents could remain anonymous unless they wished to be paid for their participation. They indicated their choice of voucher on the last page of the questionnaire. These were either handed or posted to them. If they elected to participate in further studies, they also indicated their voucher preference.

3.3 Interviews

The final phase of the study involved an in-depth interview with participants who volunteered in the process of filling out the questionnaire. Thirty respondents confirmed that they would like to take part in further (confidential) studies. Seventeen women and eleven men (28 people) eventually took part in the follow-up interviews; scheduling difficulties meant two people were unable ultimately to participate. The resulting sample is described in Table 1, showing some of the key characteristics of the people interviewed.

Table 1. Description of interview participants (F for female; M for male).

Participant No.	Occupation	Age of participant	No. of children	Age of youngest child	Hours worked/ week	No. of cars
F1	Hotel consultant	21-30 years	1	Preschool	35-39 hours	1
F2	Freight company clerk	21-30 years	2	Preschool	35-39 hours	2
F3	Communications co-ordinator	31-40 years	1	Preschool	20-24 hours	1
F4	Market research consultant	31-40 years	2	Preschool	20-24 hours	1
F5	Computer programmer	31-40 years	2	Preschool	20-24 hours	2
F6	Clinical nutritionist	31-40 years	2	Preschool	40+ hours	2
F7	Civil/structural engineer	31-40 years	1	Preschool	40+ hours	2
F8	Conceptual design manager	41-50 years	2	Preschool	40+ hours	2
F9	Government education advisor	41-50 years	2	Primary school	40+ hours	2
F10	Travel consultant	21-30 years	1	Primary school	40+ hours	2
F11	Local city council officer	31-40 years	2	Primary school	20-24 hours	1
F12	Executive assistant	31-40 years	2	Primary school	35-39 hours	1
F13	Administrative assistant	31-40 years	2	Primary school	35-39 hours	1
F14	Travel consultant	31-40 years	2	Primary school	35-39 hours	2
F15	IT systems analyst	31-40 years	2	Primary school	35-39 hours	2
F16	Accountant	31-40 years	2	Primary school	40+ hours	3
F17	Nursery school specialist	41-50 years	2	Primary school	30-34 hours	1
M1	Editor for scientific publication	31-40 years	2	Preschool	35-39 hours	1
M2	Workplace solutions contractor	31-40 years	2	Preschool	35-39 hours	2
M3	General practitioner	31-40 years	2	Preschool	40+ hours	2
M4	Software support engineer	31-40 years	1	Primary school	40+ hours	2
M5	Curator of photographic evidence	41-50 years	2	Primary school	35-39 hours	1
M6	IT design engineer	41-50 years	1	Primary school	35-39 hours	2
M7	IT support engineer	41-50 years	1	Primary school	40+ hours	2
M8	Environmental health officer	31-40 years	2	Secondary school	40+ hours	2
M9	Business analyst	41-50 years	3	Secondary school	35-39 hours	2
M10	Software developer	41-50 years	2	Secondary school	40+ hours	2
M11	Technical consultant	41-50 years	1	Secondary school	40+ hours	2

Respondents were contacted by telephone or email, and a suitable time agreed. They were given the choice of time and location for an interview, which could either be their home, workplace, or at HP Laboratories, Bristol.

Participants were given a spoken statement at the beginning of the interview, in which the purpose and scope of the interview were explained to them. Their consent to

record was obtained, and the assurances of confidentiality and anonymity given. With the respondents' permission, interviews were recorded on minidisc for later transcription.

Each participant was interviewed by two researchers, the interview having three main parts:

In the first part, we asked participants to describe the previous day to us in quite a lot of detail, between the times of rising and retiring. While the participant did so, with occasional prompts and requests for clarification from the first interviewer, the second interviewer constructed a visual representation of the participant's day. We called this representation a "Day Map." For the Day Maps, we used sheets of flip-chart paper which had been divided into 6 columns, headed: time; location, activity / purpose; reminding activities; technology/artefact/strategy use; problems and stresses. As the participant talked, the second interviewer took notes on PostIt notes and stuck these in time-aligned rows in the appropriate columns to populate the Day Map.

The instructions read to participants were as follows:

"The first thing I want you to do is to describe your day (today/yesterday) to me starting from when you got up in the morning to the end of the day. As you describe the day, focus on the different activities you had to do and had to manage both for work and for family. Talk about the different things you had to remember, and any thing you used to help you carry out these activities. This could be some piece of technology (like a mobile phone), a bit of paper, or a way you have of coordinating and managing different activities (e.g., piling the children's things by the front door in the morning). All of this should cover both activities at home, at work, travelling between work and home, and travelling elsewhere (such as in the shops or in the local community).

Mention in particular any stresses or problems you encountered during the day. Talk too about anything that went particularly well and why. I will sometimes prompt you for more information or ask you more questions about what you did. While you're doing this, my colleague will be trying to construct a general "picture" of your day. Don't worry about this at the moment. We will look at this together later."

When the participant had concluded his or her Day Map account, the second interviewer explained to the participant that he or she would now "read back" the account, in order that the participant could correct any errors, but also use it as an opportunity to recall previously forgotten details. Corrections and additions were added on new PostIt notes.

When this process was finished, the third phase of the interview began. It consisted of a set of follow-up questions pertaining to the day just recounted, and more general questions. Questions pertaining to the day included: how typical a day this was; and what the most positive and negative things about the day were. Some of the general questions were based upon responses in the questionnaires, which were taken to the interviews. For example, "In your questionnaire you said that your week is highly routine. Is your daily routine enjoyable or not?" followed up with a "why?" probe. Other general questions included: the main sources of day to day stress encountered; whether there is typically a "most stressful time of day"; how the person felt about the demands on him or her; and how (additional) spare time would be used. There was also a set of questions based upon whether participants would like to be able to do

more home tasks at work, or work tasks at home. Finally, there was a set of questions about the respondent's use of technology (as identified in the questionnaire and interview): what technology is most useful; how the person felt about the various technologies they used; what sorts of things would they like technology to do for them that it currently doesn't do; and whether they could imagine a technology which would be an "ideal" technology for them (and if so, what that would be).

The interview in total typically lasted about an hour. When completed, each participant was paid £25 in shopping vouchers.

3.4 Analysis

The questionnaire items were analysed statistically using SPSS (Statistical Package for the Social Sciences). Details of the analyses and data interpretation may be found in the Companion Report.

The interviews were transcribed by four of the six interviewers. The data were categorised into domain (e.g. management of domestic duties; home and work segregation/integration) and then into "themes" as the latter emerged from the data. The quantitative and qualitative data were then analysed and interpreted together, using both quantitative and qualitative methods.

We will present the findings by integrating both questionnaire data, excerpts from the interviews, and the data from the Day Maps to present as comprehensive a picture of the lifestyles of these working parents as is possible. We begin with overall demographics gathered mainly from the questionnaire. We then turn to the structure of a "typical day" for working parents gleaned mainly from the Day Maps in order to give a sense of the different phases of the day, the activities within them. Following this, we look at the degree to which home activities are done at work, and work activities at home, and then turn to more general issues of stresses and strains in the lives of working parents. The final sections describe use of technology, first in a general way, then focussing in on three key areas: communication activities, reminding and planning activities, and ideal technologies (as suggested by the questionnaire and interview participants). Throughout, only the main findings are presented. More detail on statistical tests, as well as more in-depth exploration of the data can be found in the Companion Report.

4. Overall Demographics

This section describes a variety of different aspects of both the questionnaire and interview groups drawing heavily on the questionnaire data. Since the interview group was a subset of the questionnaire population, in general we show the results for the bigger sample (the questionnaire group). In terms of statistical tests, there were few differences between the interview and questionnaire groups, but where relevant, they are discussed.

4.1 Gender and Age of Working Parents

A total of 64 people filled out the questionnaire with more females in the sample (40) than males (24). The modal age group was 31-40 years with most (91%) between 31-50 years. Partner's age groups followed a similar trend.

In all, 28 of these questionnaire respondents were interviewed: 17 females and 11 males. For these participants, the age profile was similar (a modal age range of 31-40 years, with 89.3% fall in the 31-50 age category) as was the age profile for their partners or spouses.

4.2 Gender and Age of Their Children

For the questionnaire respondents, 49 of the 64 had boys and 46 had girls. There were a total of 120 children in all (62 girls and 58 boys): a mean number of 1.88 children per family in line with the national average.

With regard to age, 25 of the respondents had children in the preschool age group of 0-4 years, 35 in the primary school age range of 5-11 years and 27 were aged 12 or over classified into the secondary school age range. Examining this in more detail tells us that 14 families had children *only* within the preschool range, 16 *only* in the primary school range and 14 *only* at the secondary school age range. Naturally, other respondents had children extending over a wider age range. The mean age for children of our participants was 8.8 years. As can be seen from Figure 1, the distribution of the children's ages was normal. The distribution of gender over age was also well distributed.

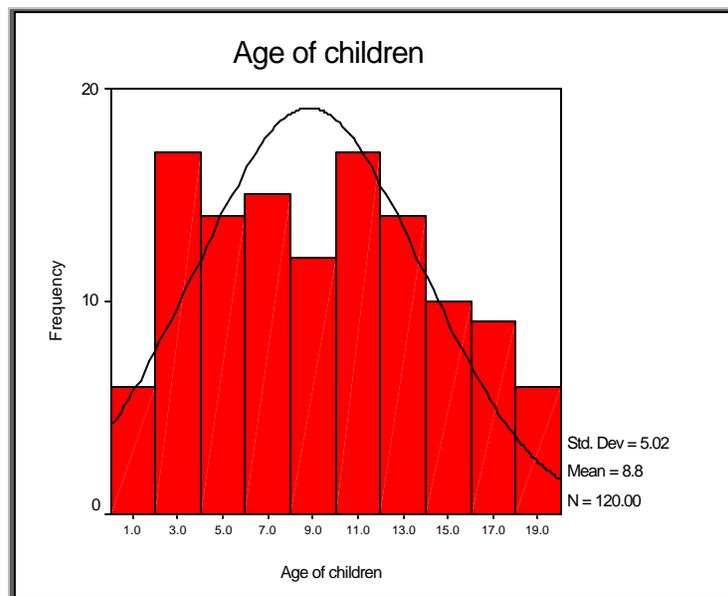


Figure 1. The age of children from the questionnaire data set.

The 28 participants interviewed showed a similar profile for gender and age of their children. A total of 49 children were within the families of our interview sample (23 girls and 26 boys), producing a mean number of 1.75 children per family. The mean age for the children was 8.3 years, close to the mean of the questionnaire sample, again with a normal distribution of these ages, and with a fairly even distribution of gender over age group.

4.3 Working Hours

Looking at the questionnaire data, Figure 2 shows the number of hours worked on average per week for both respondents and their partners (the data were merged to increase the sample size and to provide an equal number of data points for men and women). A similar pattern was found in the interview data set.

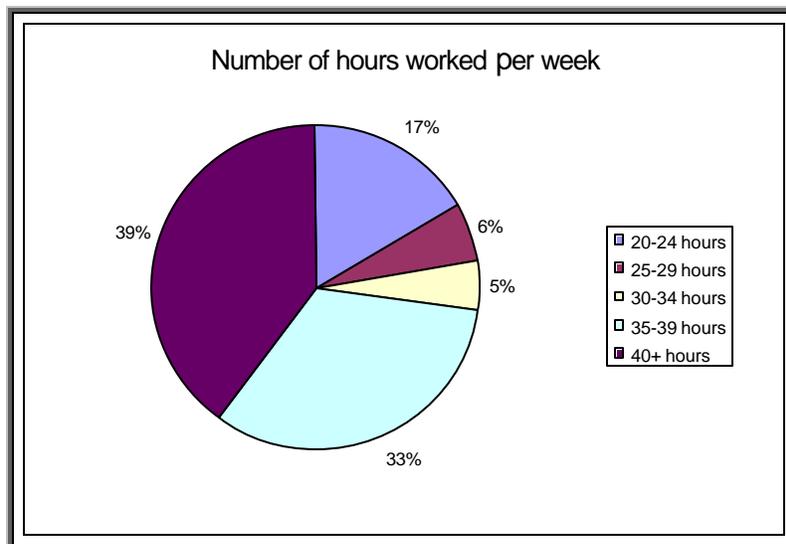


Figure 2. Hours worked per week for the questionnaire data set.

This shows that 72% of working parents worked more than 35 hours a week, with almost 40% working, on average, more than forty hours a week. The relatively high percentage of workers categorised into the 22-25 hour category can be explained by part-time employment. There were some marked sex differences here, however (Kruskal-Wallis test, $\chi^2 = 28.837$; $df = 1$; $p < 0.001$), shown in Figure 3. This analysis shows that men accounted for the greatest percentage of workers reporting working weeks of more than 40 hours. Women, in comparison, were much more likely to work part-time, especially in the 20-24 hour category. None of the men in our sample fell into this category. This analysis and pattern of sex differences also holds true for the smaller interview sample.

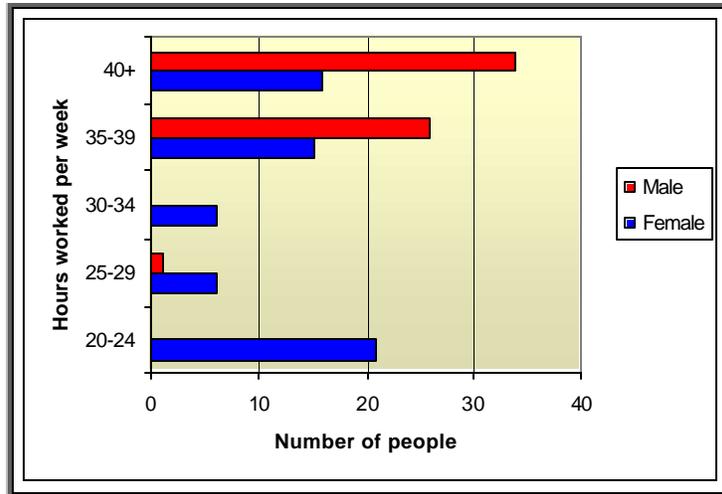


Figure 3. Hours worked by both sexes for the questionnaire data set.

4.4 Place of Work

With regard to place of work, again we merged data from the questionnaire respondents and what the respondents reported for their partners. Figure 4 shows clearly that most of the working parents worked outside the home, while a smaller number (17%) reported their predominant workplace to be in the home. A number of these were self-employed and therefore their home doubled as their workplace. In addition there was a small group who split their working time fairly equally between home and the workplace. A similar pattern was found for the interview data set.

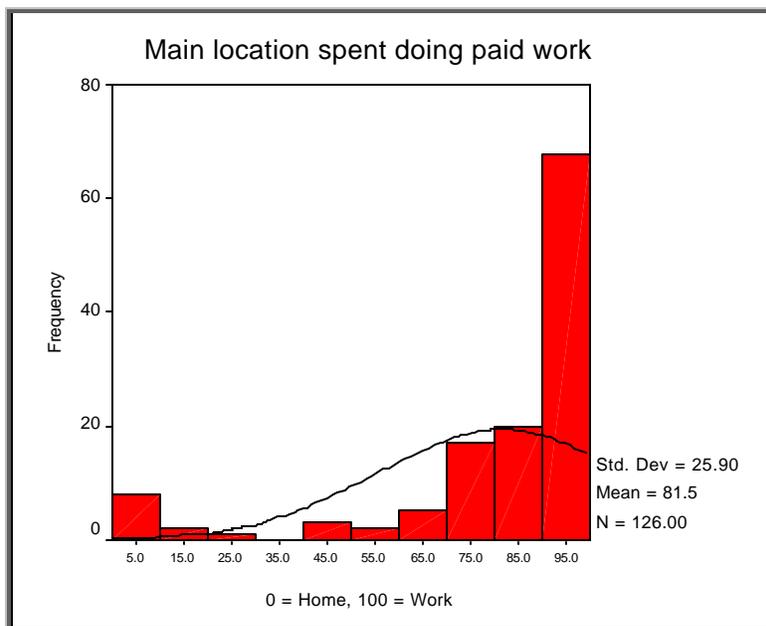


Figure 4. Main work location from the questionnaire data set.

4.5 Mobility and Work

Not including commuting between work and home, we looked at the extent to which our questionnaire sample spent time travelling in a typical working week for the purpose of work. Merging data from both the respondents and the respondents on behalf of their partners, we found more than half of respondents travelled from monthly up to daily, and 37% travelling at least weekly (Figure 5). Only a small percentage (15.9%) reported never travelling for work. This indicates not only the diversity of job types and roles, but also the highly mobile nature of some of these respondents' working lives. Patterns for the interview data set were similar, the only noticeable difference being a tendency toward more travel monthly and less quarterly.

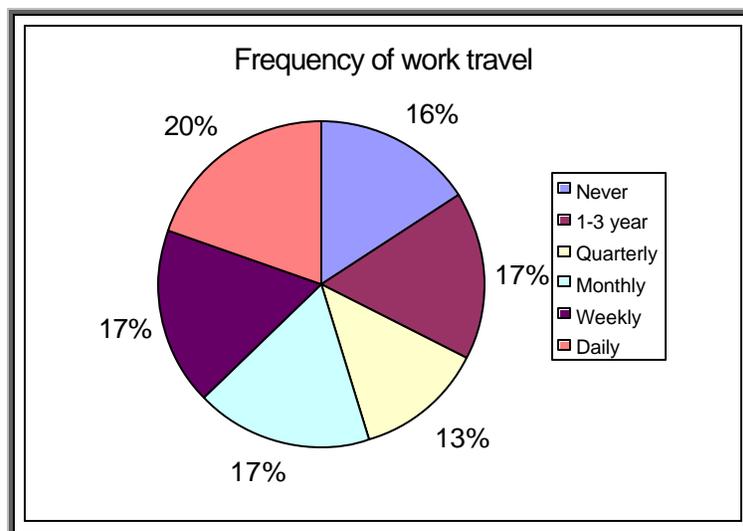


Figure 5. Amount of work travel (aside from commuting) for the questionnaire data set.

When we looked at men and women separately in the questionnaire data, however, we found that men were more mobile than women for work purposes (Figure 6). These differences were most striking in that more than three times as many women as men reported never travelling for the purpose of work. This result was confirmed by a Kruskal-Wallis test ($\chi^2 = 3.933$; $df = 1$; $p < 0.05$). This may be associated with the increased hours that men work or it may be that the women chose to work in occupations that allowed them increased flexibility in case the need arose to attend to extenuating home circumstances such as sick children which a job involving travel would not support.

Comparing the questionnaire data to the smaller interview set, we see fewer systematic differences between the sexes with women frequenting some categories more and men frequenting others. The Kruskal-Wallis test performed in this case was not significant ($\chi^2 = 1.921$; $df = 1$; $p = \text{not significant}$). It is therefore not clear that,

with respect to this travel metric, the interview participants were a representative sample.

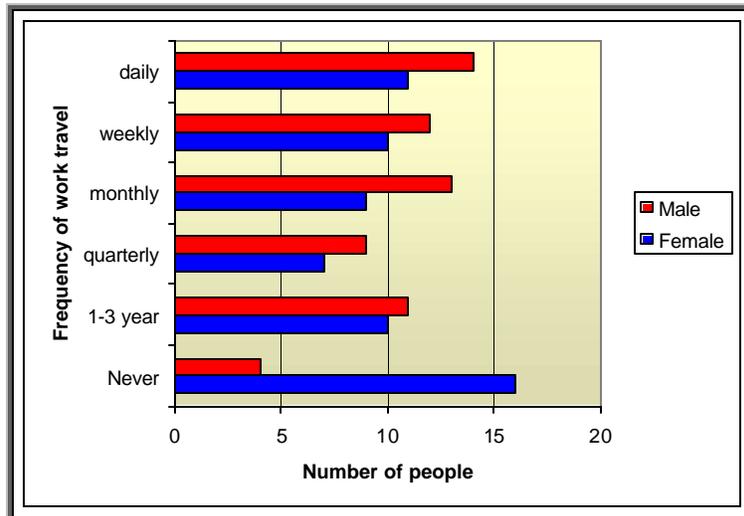


Figure 6. Amount of work travel (aside from commuting) for the questionnaire data set for men and women.

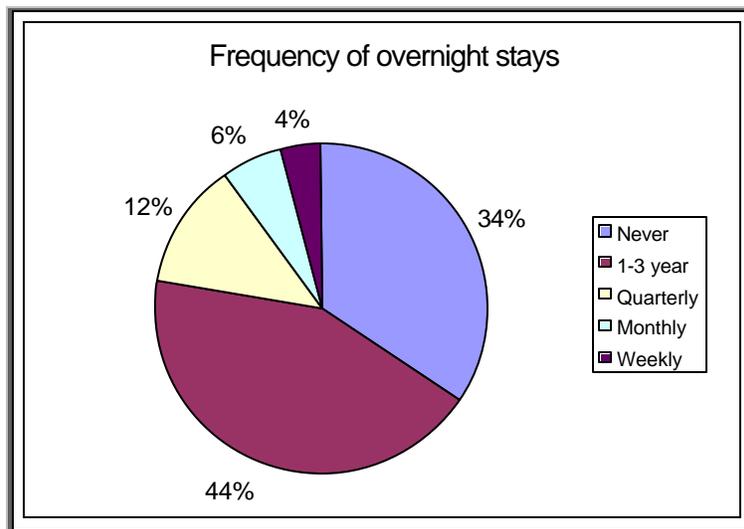


Figure 7. Frequency of overnight stays for the questionnaire data set

Turning to the frequency of overnight stays for the purpose of work, we found that these did not occur very frequently (Figure 7). Just over one third of the questionnaire respondents were never required to make an overnight stay, and the greatest percentage, two-fifths, needed only to make one to three overnight trips per year. A very similar pattern of results can be seen for the interview data set.

As with work travel, we again found sex differences for this issue. Here, men were far more likely to stay overnight away from home for work purposes than women (see Figure 8). Not only were women more than twice as likely to never stay overnight away from the family home than men, but for those women who did have overnight stays, those overwhelmingly occurred (72%) only one to three times per year. In comparison to the fifty percent of women who do not stay away overnight, just twenty percent of men were reported in the same category. (A Kruskal-Wallis test confirmed the statistical significance of these differences, $\chi^2 = 13.956$; $df = 1$; $p < 0.001$.) In the case of the interview data set, the pattern is similar but this time does not reach statistical significance.

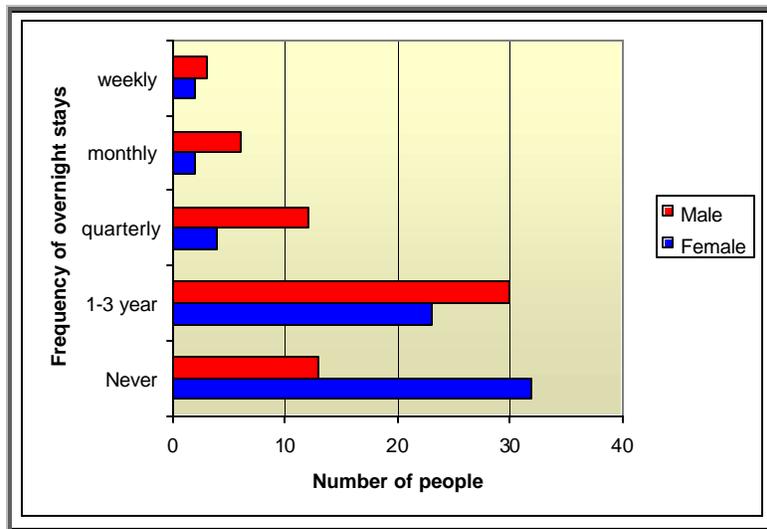


Figure 8. Frequency of overnight stays for work purposes for men and women (questionnaire data set).

4.6 Mobility and Mode of Transport

We have seen that many of these working parents were highly mobile for the purpose of work. Looking more generally at mobility (for work, for home, and for commuting between them) however, adds to this picture of working parents both as highly mobile, and heavily dependent on the car.

For example, it is instructive to look first at the Day Maps from the people we interviewed. Looking only at the number of different journeys these working parents made for the days that they described to us (a journey being any trip between an origin and a destination), we found that no person in that sample did fewer than three different journeys in the mapped day. More than half made six or more journeys in the mapped day (Figure 9), and one person even reported twelve different journeys. That being said, many of these destinations were in fact “transitional places” – places where working parents only stopped for five minutes or so to drop off or pick up children, for example. Others were places they stopped for longer (such as stopping to shop on the way home from work). Such trips for working parents are often then complex trips, serving multiple purposes, and involving changes along the way in purpose, destination, number of passengers, and so on.

Most of the journeys we discussed during the interviews were car journeys. This reliance on cars was typical of the bigger questionnaire sample. Here we found that 83 percent of questionnaire respondents had two cars within the family home (mainly one for their partner and one to use personally) with the rest having one car per household.

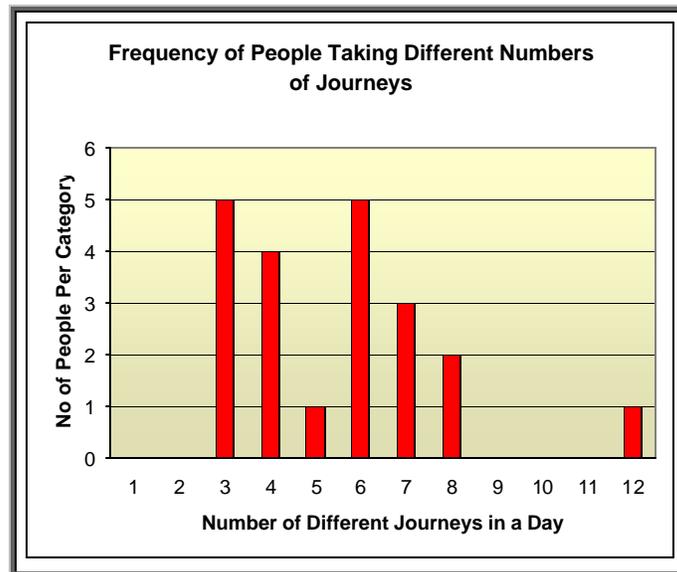


Figure 9. Number of people taking different numbers of journeys per day.

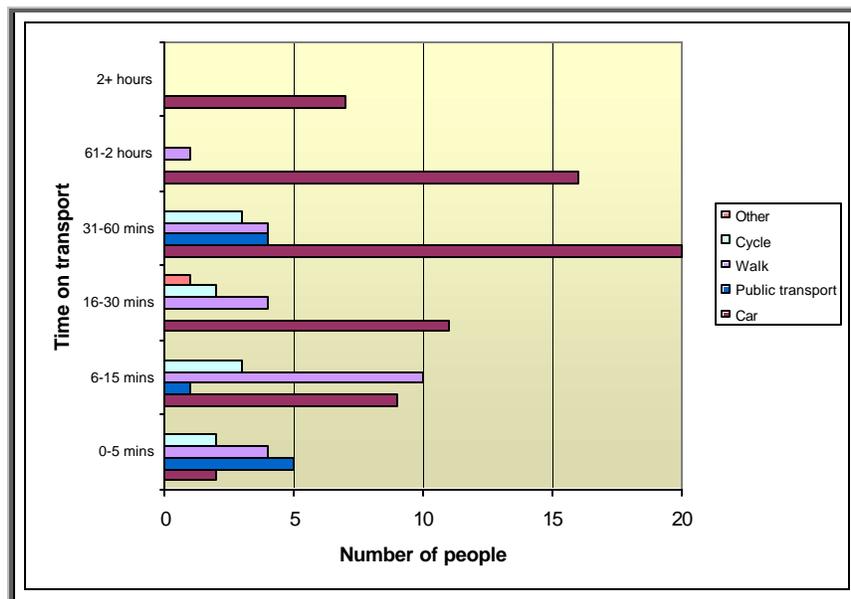


Figure 10. Amount of time per day spent using different forms of transport. This is confirmed by Figure 10 which shows the overall amount of time that questionnaire respondents spent during a typical working day travelling and commuting using different modes of transport. This shows that the car was the

predominant mode of transport, and was mainly used for between thirty-one and sixty minutes per day (closely followed by use for between one and two hours). Walking was the second most used mode of “transport”, usually in categories of shorter duration.

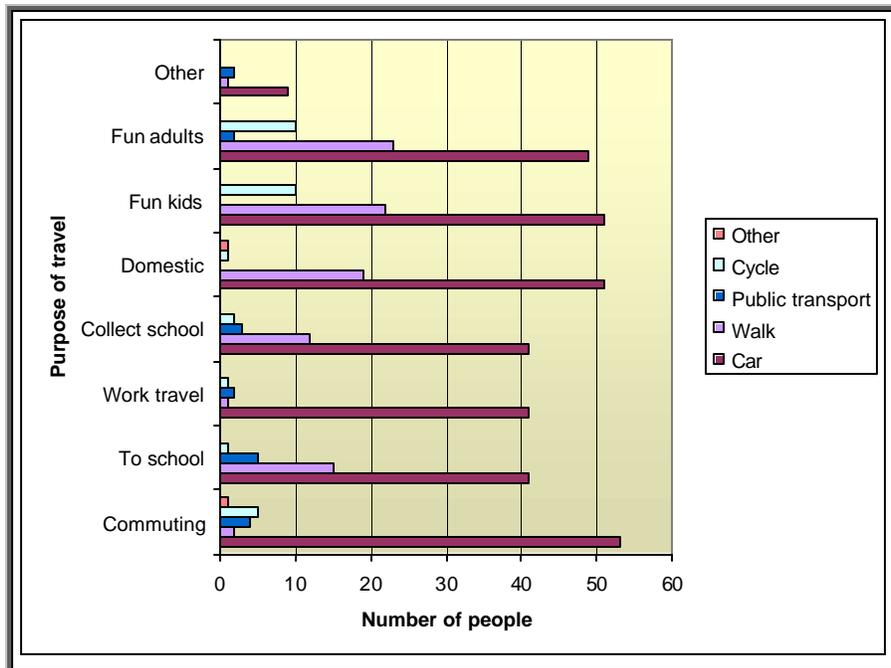


Figure 11. Frequency of different forms of transport for different activities.

We can also look at the breakdown of transportation mode over type of activity. As is shown in Figure 11, the car was the main mode of transport for most activities including commuting, taking and collecting the children from school (nursery or childminder’s house), domestic chores and leisure activities (see the Companion Report for a breakdown of activities for the car). Walking was the next most popular mode especially for adult and children’s leisure activities and for collecting and taking the children to school or childcare. Public transport, use of bicycles and other forms of transport were all quite low.

Figure 11 also shows the extent to which the car was used for many different purposes and activities. The results from the Day Maps mentioned earlier are helpful here in suggesting that one of the main reasons for dependence on the car was in support of the complex kinds of journeys that working parents do. Working parents must be able to transport other passengers and various kinds of baggage (such as book bags, shopping, and work items); they must allow for changes in destination along the way (and the complex routes that these may entail); and they cannot be tied to inflexible schedules, as timing for getting children to school, music lessons, and for getting to and from work, is unlikely to fit with public transport schedules, for example. The car then becomes the essential, central mode of transport for the working family. Perhaps it is therefore unsurprising that most families in this study had two cars rather than one.

4.7 Domestic Responsibilities

We turn next to what the data say about domestic routines and responsibilities. Here, the questionnaire data give us some sense about who in a household generally does what, although the interviews give much more detail into how these roles and responsibilities were actually played out within these working parents' homes. These details will be discussed later when they are relevant to different central themes of the data.

In terms of the more general data, one of the findings from the questionnaire was the extent to which the families in our sample did not rely on extra help either for domestic chores, or for childcare. For example, two-thirds of the participants reported having no extra help with the housework, a quarter had help once weekly (presumably in the form of cleaners) and none had daily help. With regard to extra childcare help, this was broken down into extra help within the home (mainly nannies, au pairs, or family members such as grandparents helping out), or extra help outside the home (meaning mainly childminders, nurseries, playgroups, or childcare in a family member's house). Here, the data show that slightly under half of the families never had any additional help *within* the home, and an additional 33% of respondents received extra help less than once a month. As for childcare outside the home, again, half of the participants received no extra help. Of the families who did have additional help, this was most likely to occur on a weekly basis, with 20% of the participants reporting this frequency.

The other main issue that the questionnaire data addressed was that of who in the household (the mother or father) took the main responsibility for a range of different household tasks. Here the main results were that responsibilities were skewed toward the mother for: taking the children to and from school (or childcare); doing the household shopping; doing the household cooking; and doing the remaining household chores (see the Companion Report for more detail). However, in all cases, there was a significant number of households where the duties were more equally divided.

It should also be noted that these questions themselves may be biased in that they excluded explicit mention of what might be viewed as more traditional male household jobs such as DIY, gardening, and car maintenance tasks. The interviews support the fact that the male partner in the relationship was more likely to take care of home decorating and fixing tasks, while equally sharing gardening tasks.

A further possible bias is that those participants who actually completed the questionnaire may perceive themselves to complete more tasks than their partners. This may partly be due to the stress they experience from these tasks and partly because they may be unaware to some extent of how much their partners do actually assist in these tasks. Because two-thirds of the respondents were female, the answers may therefore reflect a bias toward the female perspective.

5. Structure of the Working Day

Turning from demographics, we now look more closely at what actual working days look like for working parents. To do this, we can draw on the descriptions given by participants in the interview study that provided detail about actual events and activities as they unfolded from morning to night. This can help us explore: what working days tend to look like; whether there are any commonalities in the structure of a working day across the sample; what activities tend to occur (and when); and how domestic and work activities fit into the larger picture of what working parents do.

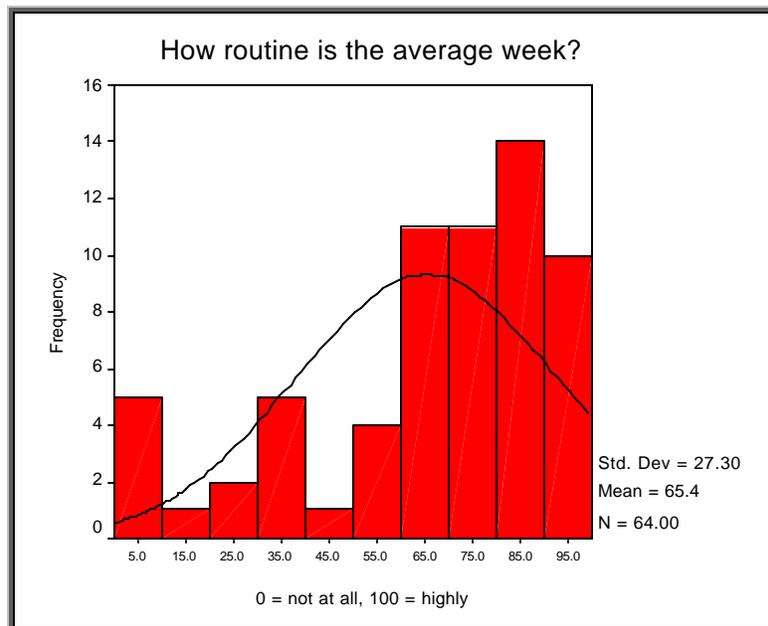


Figure 12. Degree to which the working week is perceived to be routine (questionnaire data set).

To do this, it is first helpful to ask about the degree to which any of these working days for our sample of working parents can be called typical or routine. When asked in the questionnaire about how routine an average working week was, the results show that most respondents consider their lives to be very routine. Figure 12 shows the highly skewed nature of the data toward the “routine” end of the scale, which is further indicated by a median score of 72.8. Extraction and examination of the 28 interviewees from the questionnaire data set produced a similar histogram and corresponding descriptive statistics, with the majority of people interviewed reporting leading medium to highly routine lives.

The interviews themselves suggest that individuals plan their lives to keep to a routine, something they enjoy and strive for in order to maintain equilibrium. As one working mother put it:

“I do like a routine, and I like everything to be in its place. Because it’s such a small house, everything’s got a place, so it makes it very easy for everybody to keep the

place tidy and working. We all do work to a routine, and we've got that to a real... because you can tell in the morning, with the showers, and we all can get to the bathroom, because we've only got one bathroom." F17

We must be careful, however, in interpreting what it means to have routine days or weeks. For example, in the 28 days we mapped out in the interview study, four of the seventeen women and three of the eleven men had days which were not routine due to business trips, sick children and so on. Therefore, while days are perceived to be routine, these “out of the ordinary” days may in fact occur quite frequently. In addition, we need to understand what it means to say that one’s working week is routine. It may mean that things generally occur in line with a set plan, tending to occur the same way each week. Or it may mean that, though things rarely happen in the same way every week, members of the family adhere and orient to routine patterns and roles. These roles or routines are mutually understood by all members of the household. They may also mutually understand the strategies that are used to deal with the variability in life. This is something we will examine in more depth through this report.

5.1 Phases of the Day

We can begin by looking at the general structure of working parents’ days by looking closely at the Day Maps for those who were interviewed. If we consider only the days for those who reported typical days, and who worked outside of the home (21 days in all), we can see that they can be described as consisting of 5 basic phases, two which are based in the home, one based in the workplace, and two which are transitional phases between home and work:

1. **Home AM Phase:** The period of time from first getting up to leaving the house.
2. **Home-Work Transition Phase:** The period of time where working parents are mainly mobile getting from home into work. This may include a number of “transitional stops” or places where working parents spend a short amount of time (mainly to drop off children at school or nursery).
3. **Work Phase:** The period of time spent mainly in the work place or at work-related sites engaged primarily in working activities. For some working parents, this includes trips out during the day either to attend to domestic chores, or for work meetings or lunches.
4. **Work-Home Transition Phase:** The period of time where working parents are mainly mobile getting from home into work. This includes a number of different transitional places before arriving home including picking up children from school, nursery, or the childminder and stopping at places such as shops.
5. **Home PM Phase:** The period of time from first getting home to going to bed. While we will define “getting home” as first arrival at home after work, many working parents then go out for a number of domestic reasons such as going to the shops, dentist, taking the children to music lessons, walking the dog, or

going to the gym. Occasionally they also may go out for work reasons including going to evening meetings or visiting clients.

We can then use the Day Maps to analyse how much time was spent in these five basic phases.

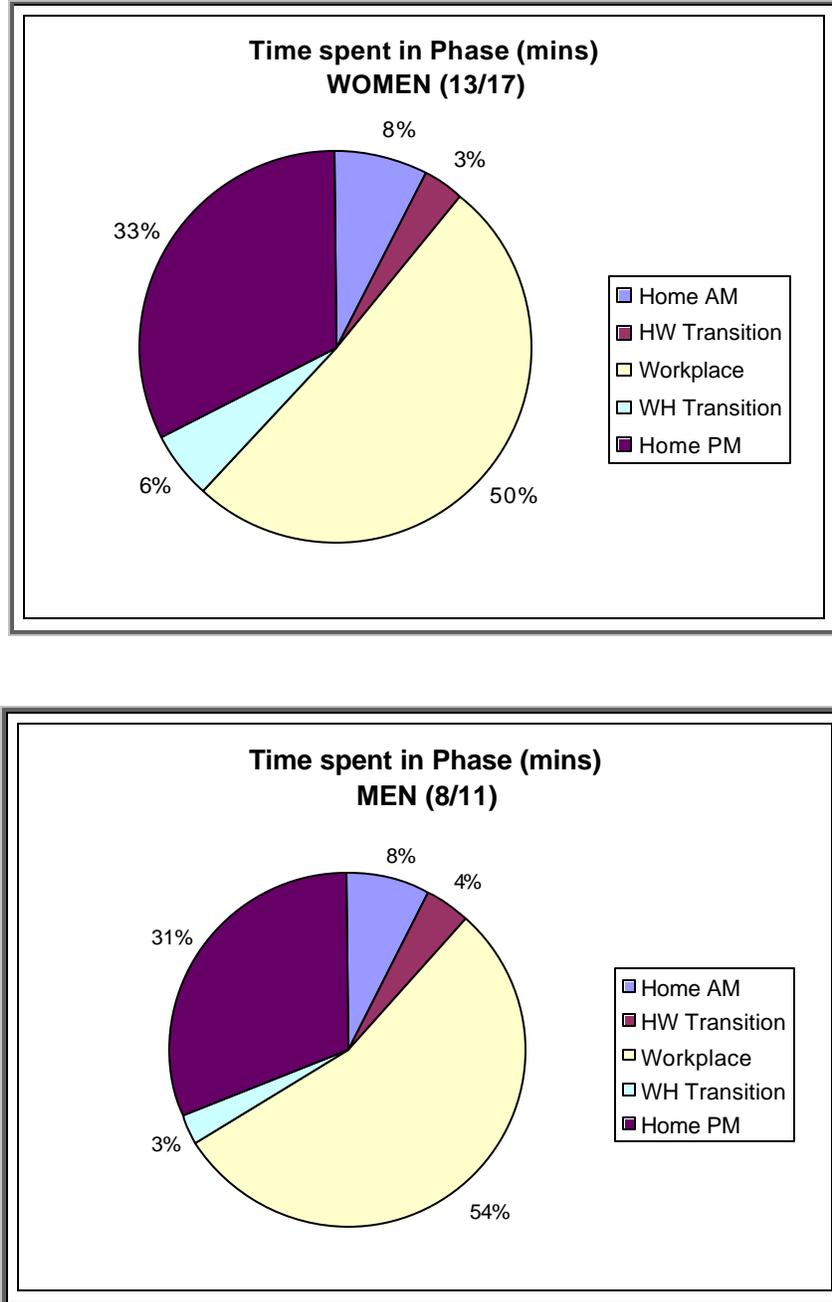


Figure 13. Time spent in each of the 5 phases of the day for women and men (questionnaire data set).

Figure 13 shows the percentage of waking hours spent in these different activity phases for both women and men. Analysis of variance tests were performed on the

data to identify any gender differences in amount of time spent in each phase during the day. The only different was for the Work-Home Transition phase ($F(1, 20) = 5.423$; $p < 0.03$) that found that women spend more time in this phase than men. Looking more closely at the Day Maps suggests that this additional time can be accounted for by a greater percentage of women involved in activities such as supermarket shopping and collecting the children from school, after school clubs or day care.

5.2 Characteristics of the Phases

As might be expected, these 5 phases had very different characteristics. In addition, the constituent activities of each phase, and the roles and routines embedded in them were very different. Across the sample, there were, however, common characteristics of each phase, which we will summarise.

Home AM Phase

The Home AM Phase represented only a small proportion of time in the waking day (about 8% of the day). From the interviews, the descriptions show that it is a busy and often stressful time, where parents are particularly active and goal-oriented, doing a variety of tasks to prepare not only themselves but other members of the family for the day ahead. This phase for our sample was entirely home-based, and oriented around a number of routines that the parents interviewed described. Broadly it consisted of getting up and waking the children, making breakfast (often for themselves, their partners and the children), preparing the children for the day ahead and caring for any pets.

Times for getting out of bed were dispersed between 0530 and 0800 for those interviewed, with most rising between 0630 and 0700. Four parents mentioned that on the day in question they rose unexpectedly earlier than normal, due to child-related issues including feeding the baby, or early rising children. Despite such deviations from the norm, many working parents talked in terms of routines they adhered to in order to help everyone get ready as efficiently as possible:

“his [son] shower is at 5 to 7; I then am in the shower at about 5 or 10 past 7. I come out of the shower and [my husband] nips in and washes and whatever, and then he comes out and [my daughter] goes in.” F17

“[my oldest daughter’s] fairly independent in the morning so I wake her up in morning, place her clothes on the bed and tell her to get on with it. Then I wake up [my youngest daughter] who’s normally grumpy in the morning and get her dressed because she can’t completely dress herself yet” F5

Responsibilities for morning activities to some extent were divided between the mother and father, the fathers in this sample making breakfast as often as the mothers, for example. Families would sometimes share responsibility for looking after their children, such as this family, taking one child each.

“we still dress the children because they’re still quite young. Often [my husband] will do [my son] and I’ll do [my daughter]” F15

It was also clear that younger children, requiring more help in terms of things like getting dressed, created a much busier time for parents who also had to attend to their own preparations for the day:

"[My daughter] is 6 ½ now and she can sometimes do herself, which is a lovely feeling because typically the mummy thinks I've got to dress myself, dress my children, clean their teeth, brush their hair...you've to do all these activities you do for yourself, but you've got to get them done three times over". F15

Seventeen of the 28 participants discussed the preparation of the children's school or nursery bags for the upcoming day. Many children fulfilled the task themselves but needed to receive reminders from their parents to check they had everything they needed.

"normally I need to remind my son a number of times 'are you sure you have got everything for today?' My son is studying in Bristol Grammar School and they have a lot of activities. So on most of the school days, he needs to carry a lot of stuff – violin, PE kit, homework– every day there are different activities." M6

To help with this, parents would often put piles of paraphernalia for different family members by the front door to ensure they would not be forgotten when leaving the house in the morning. For those families where the parents did pack the children's bags, the mothers fulfilled this task most frequently. It was not unusual for the parents to place their own bags and necessities by the front door as well.

"I put as many things as I could by the front door which involved work bags, daughter's school bag and nursery folder". M3

"I do have one little cue for myself. As I went through the front door, all my bags and everything I needed for the day were lying on the floor in the hall ready to go. It's set up the night before. I always do that." M11

Because of lack of time in the morning, use of technology in this phase of the day was limited to the occasional use of the radio for parents, and the use of the TV especially for younger children. It was clear that this was mainly to keep the children occupied so that the parents could get on with all the other activities that needed doing.

Home -Work Transition Phase

In the Home-Work Transition Phase, the Day Maps show that this also represented a relatively small proportion of the waking day (less than 4% of waking hours). By definition it is a mobile phase, where working parents are moving from home to work, mainly by car, although a few people cycled, walked, took the train or took a motorcycle. This phase could sometimes involve quite straightforward journeys for one parent, but could be more complex for the other who had to stop to drop children off at school, nursery or the childminder's house. The following is a particularly complicated example:

"I had to use the car to get [younger child] to nursery and [older child] had to come along for the lift...given the time scales I can't get the two children there and one child back to school in time, so if [husband] can't help delivering one child then I have to use the car, so ferry two children to nursery in the car, drop off [younger child] at 8am, ferry [older child] back here in the car, dump off the car...by that time it was 8.15am, I then do the washing up, play a couple of games with [older

child] which takes us through to about 8.30am, get my bike out the garage, make sure [older child] got all the things she needs for school, has she got her book bag and a snack, so walk along to the lolly pop lady[crosswalk guard], who's just at the end of our road, I walk with my bike and she walks with me, I wave goodbye to her at the lollipop lady and watch her go through the school gate and cycle on to work, I get to work at about 9am" F5

In our sample of 21 people who had typical days, five of the thirteen women, and five of the eight men had journeys involving one or more stops. These stops were usually quite short, however, lasting only 5-10 minutes.

For the majority of people, this phase was car-bound. Most used this time to listen to the radio (for relaxation or catch up on the news). But it was also a time where the mobile phone was a central technology. Most often, the mobile phone was switched on so that these working parents could make themselves available, mainly to the rest of the family. Further, almost half of the people interviewed either made or received phone calls during this time on the mapped days.

Domestic reasons for this had to do with confirming other members of the family have done what they are supposed to have done, and are where they are supposed to be:

" I always call my son at 8.15am which is just when he's leaving the house just to make sure he's turned the lights off and the television off, and he's all ready to go, and to lock the door on the way out." F14

These sorts of phone calls, checking where other members of the family are and communicating what needs doing for the household were key uses of the mobile phone during this transitional time.

But it was also clear that despite restrictions on phone use while driving, this time was sometimes used to accomplish work as well:

"You can almost work out when other members of the team are travelling ... we can get an hour of uninterrupted conversation by simply calling car to car.... We know we're both on motorways." M11

In addition to voice calls, several of the people we interviewed used this time to check voicemail, and also to read or send text messages, often in the service of getting ready for work, or taking care of some of the preparation for work.

They were also likely to use this time to do reminding and planning activities both for home and work such as mentally running through the day's events, and calling to check on schedules for childcare. For those not driving, such activities included making lists of things that needed doing domestically, or reading through email printouts and diaries for reminders of the day's work activities. This is what one working mother being driven by her husband said they did in the 10 minute drive from home to work:

"He's got a scrubby piece of paper somewhere and so we wrote down what we're going to have to do and discuss that. I have a guitar lesson tonight so I need the car, so we discuss that, and we did all our discussions then." F8

In other experimental work, we have found that transitional times are those most likely to give rise to the remembering of intentions (Sellen et al., 1997). It is perhaps not surprising, therefore, that time spent mobile is time in which planning and reminding feature in the lives of working parents.

This mix of home and work activities was clearly part of a bigger issue having to do not just with making a *geographical* transition from home to work, but also making a *mental* transition from home to work:

“By the time I’ve left home I’m thinking about work because that’s the direction I’m heading in, and then in the evening when I leave work I tend to already be thinking about home.” F15

“I’m usually quite switched off, thinking about what I’ve got to do when I get to work...” F14

Nippert-Eng (1996) has made similar observations about this transitional time:

“The mental journey is what home and work transitions are all about. Physical journeys and visible behaviors simply facilitate the cognitive side of the process. Despite their visibility, driving to work, putting on and shedding coats, locking and unlocking doors, reading mail, and the numerous other minutiae that constitute personal transitional behavior are not the essence of transitions. Rather, they are the tangible grease that help our mental gears shift between the ways of thinking and being associated with either place.” (p. 106)

Work Phase

The work phase represented the largest proportion of time in the day, constituting on average about half of these working parents’ waking hours. Obviously the range of activities undertaken in this phase of the day depended very much on the nature of each person’s job. For example, although most worked in an office environment, some were more deskbound than others (such as travel agents and clerical workers). In general though, most people mentioned a range of activities including: collaborative activities (meetings, seeing clients, impromptu discussions, teaching, training), solitary deskwork (software development, form filling, writing documents and proposals, formatting documents, reading, performing transactions, data analysis, design work, database work), communication (answering and making phone calls to clients or colleagues, checking voice mail, reading and sending email), and planning activities (dealing with their own and other people’s diaries and schedules, planning projects, making lists).

Trips out during the working day were not common. For the 21 people working in offices on the mapped days, thirteen did not leave the office until the end of the day (eight of the thirteen women, and five of the eight men). Of the four women who made journeys out, two went home to attend to chores, two went out for work-related meetings, and one went home to pick up a child from a relative and deliver him to a crèche. Of the men who made journeys out, two went out for work-related meetings, and one went home to install a new CD writer during lunch.

With regard to the intrusion of home activities into work time, more of these crossover activities were evident in the women’s mapped days than the men’s.

Women were more likely to report taking care of a variety of domestic matters such as scheduling dates for holidays, phoning about plans for childcare or children's activities, paying bills through Internet, shopping on the Internet, and making calls to confirm events happening for the family.

In addition, both fixed line and mobile telephones were used to coordinate and check on family matters. Here again there were sex differences with women more likely to initiate such calls and men more likely to receive them. In some cases, the mobile phone was used as the channel through which domestic calls were received and through which working parents stayed available to their family. There were instances of this for both women and men. E.g.,:

"I always have the phone on, I always put it on silent because if anything ever happens with my son... then it's ok to contact me at work, but because obviously being on the phone all the time, if there's ever a problem, it can either be text or if I miss a call then I can pick it up, I always leave it on just in case" F1

Interviewer: "Do you ever get phone calls on your mobile phone at work?"

"Yes. They're generally about 4.30 in the afternoon and it's my son phoning up saying can I do this or can I do that, or my sister's just done this to me – can you tell her off? Or can I go with my friends, can you pick me up on the way home? Or something like that." M8

My wife will phone during the day occasionally – if we need something can I pick it up on the way home, or if there are any changes to the plans we had, or whatever, for the day. She will always use my mobile." M8

Not only were there sex differences in the extent to which home intruded on work, and the manner in which it did, but also in the stress that this caused men and women. These issues are explored in greater detail in Sections 6 and 7.

Work -Home Transition Phase

The Work-Home Transition phase exhibited many of the same characteristics of the Home-Work Transition phase. Again, with regard to the amount of time this phase took, it represented only a small proportion of the day (about 5%). However here women spent more time than men (6% as against 3% on average). This was undoubtedly due to the greater proportion of women who worked shorter hours in order that they could take responsibility for picking up the children and taking care of after school activities.

Again, in this phase, short stops to pick up children or do other domestic chores (such as shopping, or going to the post office) were common. Here, only three of the 13 women went straight home from work, whereas half of the men did, the rest also picking up children or shopping.

Use of technology is also similar to the Home-Work Transition phase, mainly involving use of the radio for leisure and the mobile phone for both work and domestic communication. The mobile phone was mainly left on in order that parents could make themselves available to the family and to work colleagues. Phone calls made and received for domestic reasons were mainly of short duration. Most commonly these were for the purpose of letting other members of the family know

what time they would be home, to coordinate picking up children, and to coordinate who would cook the family meal. This was not only between spouses, but also included calls from older children.

Analogously, the journey from work to home involved a mental as well as geographical transition from one sphere of activity to another. In this case, moving from work to home meant turning one's attention from work concerns to home concerns:

"Usually as soon as I get into the car, I've switched off from work and I'm thinking about what I'm going to be doing when I get home then." F14

The mobile phone was sometimes used as a way of finishing off work activities and drawing a line under them before arriving home:

"The mobile telephone is wonderful, because whilst I'm driving I can still be working and I get very annoyed and I've finished my working day and then other people are then phoning me up, that is annoying and I'm thinking I've just spent an hour in the car, couldn't you have contacted me then, it is easier to conduct the wrap up of the day in the car on the way home" F6

For many working parents, the home was seen as sacred in the sense that conscious efforts were made to keep work activities out of the domestic environment as much as possible. Again, this is discussed in more detail in the next section (Section 6).

Home PM Phase

The Home PM phase constituted on average a third of the waking day. It was defined as the phase of the day that began when parents first arrived home until they went to bed. This phase often began as a busy time, with trips out to attend to domestic matters (often involving the children) and a general rush to prepare an evening meal. Demands particularly from young children, combined with fatigue on the part of the parents often resulted in reports of stress at mealtime, bath time and bedtime, all of which is described in greater detail in Section 7.

Parental involvement in children's weekday and after school activities fell into four main categories: music lessons, sports activities, education and health. Most school-age children in our sample were involved in at least one after or out-of-school activity and many had these on multiple occasions. Perhaps not surprisingly, then, many of the parents we interviewed did not stay home after arriving home on their mapped days. In our sample of 21 parents with typical days, ten stayed home and did not leave the home again. However, five of the women made trips out mainly before mealtime to take care of children's activities. Most of the men (six) were also mobile in this phase of the day, though not involving children as often, for reasons such as going to the shops, seeing the dentist, dining out at a restaurant, and also work-related trips out of the home.

Once home, activities with the children involved such things as helping with homework, as well as form filling for school purposes. Half the participants discussed playing with their children. Children also often spent time both before and after dinner watching television, videos or playing on their computers.

Meal time was a particularly busy time. All 28 people interviewed discussed cooking the evening meal and some very different and complex patterns emerged. Firstly, no strong routine could be identified, and cooking was seen more as a stressful chore and source of guilt, than as a pleasure:

“I really, really don’t like cooking twice it would be my one big thing, you feel so guilty as a mother if you don’t cook everybody a nice wholesome meal everyday.” F4

“[On the weekend] we do have a family meal together, which takes a little more forethought and planning, whereas during the week [my older daughter] has school meals and there’s only one day that I have a cooked meal with [my younger daughter] because she gets fed at nursery, so the rest of the time I just have to chuck something in the pan for me and [my husband] whereas at the weekend I can think and prepare what I’m going to do for all of us” F5

Adding to the stress was the fact that, in some family situations, multiple meals would be cooked. This would either happen when one parent arrived home late from work and therefore required a different meal, or would occur because different meals would be made to cater for the different tastes of different members of the family: e.g., one for a very young child or baby, another for the children and a third meal for the adults:

“Because [my son] being so young, he has something different. [my daughter] doesn’t like what we have, so she has something else, and then I do whatever I’ve decided we have. I find cooking quite stressful because I have to do so many things.... [My son’s] is quite easy because I just bung it in the microwave and give it a quick mush and give it to him, but [my daughter’s] more the difficult one. She’s at a difficult age.” F2

In general, for weekday meals, the women took main responsibility for the cooking in twelve of the families. The men or husbands did so in four families. The parents shared the task in five of the families and equally in three families they took it in turns during the week. Children were involved in the cooking for the family in one situation, making it more of an exception than a general behaviour.

Other busy and stressful times of the evening were around bath and bedtime. For young children in particular, parents often took turns supervising bathing the children and putting them to bed, while the other would attend to another chore, such as cooking the adult meal or washing dishes. With regard to bedtime, most children were put, or told to go, to bed between the hours of 7.30pm and 9pm. Most participants with young children spoke of routines for bedtime which they tried to adhere to. For families with children who were aged ten years or older, there was less mention made of routine or of parental involvement.

Aside from the heavy demands of dealing with the needs of the children, the other kinds of activities that were seen to occur included communication activities to friends and family, including the use of the phone and email. Checking the answer phone and opening up the post often triggered these activities.

Particularly for families with young children, children’s bedtime often marked a watershed after which either parents relaxed in front of the television, or attended to various other domestic duties. Domestic chores included preparation for the next day: checking schoolbags for letters and form filling, getting dinner money, clothes, lunches ready for the children the next day, and putting things out ready for work.

Such time was also used to do some household administration such as paying bills, and filling out forms. It could also be the time during which domestic plans were discussed such as planning holidays or weekend activities.

In only two cases did working parents use this time to do any work-related activities. One working father saw this as a necessary way of freeing up time in the future to spend with the family:

“Once we get the children settled, that would be when we start doing the work. So that would be later on in the evenings and we could be up until midnight until everything’s finished. Either that or we have to do the work on the weekend, which neither I nor my wife want to do because that’s the only time we’ve got to relax and be with the children and do something.” M8

6. Home-Work Crossover

We have seen that working parents’ days can be described as consisting of different phases, in which some of the day is spent mainly doing domestic activities in the home environment, some is spent mainly focussed on work in the workplace, and some in making a transition (both geographically as well as mentally) from one to the other. We have seen that working parents have to balance and manage many different activities, with demands on their time from both the home and work spheres. In this part of the report, we look more closely at the degree to which home and work boundaries are maintained or are blurred in order to cope with different kinds of demands.

In the questionnaire, we asked respondents a range of questions about the degree to which their home and working lives were intermingled. Topics investigated included the degree to which respondents carried out home tasks at work, or work tasks at home and their feelings about mixing or keeping separate these two domains, the degree of perceived workplace tolerance for parents to undertake some home activities at work, as well as for use of workplace resources such as email and telephone for these purposes. It also looked at how much free time respondents felt they had, and their degree of satisfaction with this. In the interviews, these themes were investigated in greater depth.

Tests were run on the data sets from the 64 questionnaire respondents, investigating whether particular issues pertain differently to men and women, or to parents of children of different ages (broadly, preschool, primary school and secondary school). Participants indicated when questions were not relevant to them and answered only relevant questions. As before, statistical tests were carried out on the two subsets of respondents: those who answered the questionnaire only; and those who volunteered to be interviewed in addition to completing the questionnaire. No differences were found, however, between the subsets for any of the questions, indicating that they did not differ from each other in the dimensions measured. Following the summary of the questionnaire data, we used the interview data to enrich the snapshots obtained from

it. Further detail on the analysis of the questionnaire can be found in the Companion Report.

6.1 General Trends from the Questionnaire Data

Respondents were asked how often at work they needed to take action on a domestic matter. The distribution of responses was biased to the “seldom to never” end of the spectrum of possibilities (Figure 14). Statistical analyses did not yield a significant difference between men and women, but differences were found across households where there were differences in the age of the youngest child. When they had children under the age of 12, parents were significantly more likely to report carrying out domestic tasks at work.

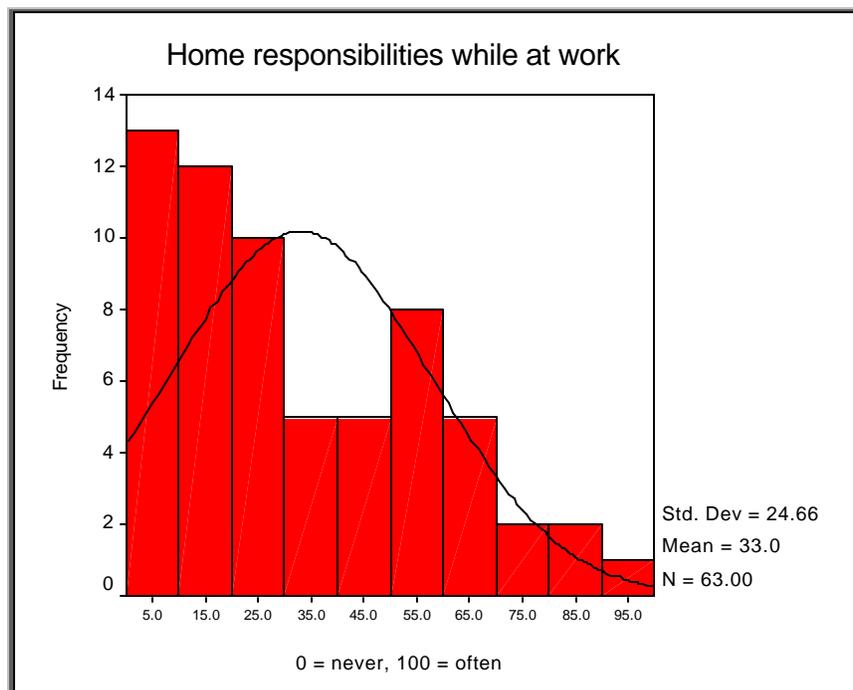


Figure 14. Frequency with which questionnaire respondents feel they need to take action on domestic matters at work.

This response is interesting, because, as we will soon see it appears to conflict with the data resulting from the interviews. The interview data suggest that both men and women *do* carry out a lot of domestic activities at work, although what is done, and how it is instigated differs between the sexes. Perhaps questionnaire respondents did not define what they do as a “domestic activity” in the way in which we intended it. Below we explore the sorts of activities that people reported doing at work that come under the broad heading of “domestic” rather than “work” concerns.

Telephone Use

Respondents were asked to what extent they felt they were able to use work resources (specifically the telephone and email) for personal purposes. For this question,

participants fell into one of two main groups: those who felt that telephone use for non-work purposes is not, or is generally not, permitted; the second, and larger, that it is freely permitted.

Statistical analyses did find differences between men and women in this case, with men feeling significantly more free than women to use the work telephone for private calls, although examination of the mean responses showed that both genders felt somewhat constrained in their use of work's phone. The significant difference between the genders is interesting, as the interview data suggested that by and large, it is the women, not the men, who are more likely to carry out domestic tasks at work using work's telephone. Two immediate possibilities presented themselves, and these and other potential explanations merit further investigation. The first possibility is that as women seem to carry out more domestic tasks at work using the telephone than do men, and the effect on their working lives is more salient to them, that they feel potential constraints more than do men. The second possibility is that a greater percentage of the women interviewed worked in a clerical or administrative capability than did the men, and perhaps the lesser freedoms and privileges associated with their work had a strong effect on the average response given by women respondents. Our data do not permit us to examine this, but the freedoms and privileges associated with different types of work is perhaps worthy of investigation in itself, especially as there is some research evidence (Becker and Moen, 1999) that women are more likely than men to "scale back" after having children, and take less demanding jobs. These "scaled back" jobs may mean less intrusion on their home lives, because the work can more readily be contained within formal working hours, but they may also offer women fewer freedoms and privileges. However, we explore these issues more in the following section using the interview data.

Perceived freedom to use the telephone at work also seemed to be affected by the age of the parent's youngest child. A statistically significant difference was found between parents whose youngest child was secondary school age, and those whose youngest child was pre-school or primary school age, with the latter feeling there was more freedom. Perhaps, given the greater dependency of children under twelve, parents feel more justified in using work's phone to manage domestic issues.

Email Use

The third question, about use of company email for private purposes, yielded different results. Broadly, about 40% of those who answered the telephone question felt they could use the work phone in a fairly to completely free manner; for email, 30% of respondents (of a total of 57) felt equally free. At the other end of the scale, broadly equivalent to a 'small' amount of freedom to 'none at all', were 27% of the responses for use of the phone, and 35% for personal use of email. These responses suggest that there is a more liberal attitude at work – or at least employees *feel* there is – towards personal use of the telephone than email. This is explored in analysis of the interview data.

Statistical analyses of this question revealed that men were significantly more likely than women to feel free to use email for personal use. Unlike the average men's and women's responses for use of the phone, which although statistically significant were not widely different, the averages in this case for men and women did differ widely.

The parents of older children (secondary school age) also perceived less freedom to use email than did parents of primary aged and pre-school children.

When further analyses were carried out, taking into account age of youngest child and gender, men were found to be significantly more likely than women to feel free to use email for personal reasons, when their youngest child was less than twelve, but not when the youngest child was twelve or over. These findings are explored further below.

Attitude of Organisation

The fourth question in this category asked respondents about the extent to which they felt the organisation they worked for was sympathetic to the needs of working parents to handle some of their domestic responsibilities during working hours. The answers were quite strongly biased towards the 'highly sympathetic' end of the spectrum, with just over 50% of the responses falling within this range; by contrast only 13% felt their employers had little or no sympathy for these parental needs. Statistical tests on gender, and age of youngest child did not find any differences.

This again is an interesting finding, given the gender differences reported above. If women feel less free to use the phone and email to handle domestic issues at work (while also doing much more of this at work), but also feel that their organisations are as supportive of them as they are of men as working parents, then it suggests that the ways in which organisations express their support do not include, or perhaps are different from, explicit permission to use the phone and email. This question, and potential opportunities to develop technology to support women (in particular) at work, are areas which should be pursued.

It is interesting too, as an in depth UK study published in October 2002 (Reeves, 2002) has found that men do not feel that their organisations support their needs as fathers. Since our questionnaire included only one general question on the degree to which respondents felt their parenting needs were supported, and this was not an issue followed up in depth in the interviews, we should treat our questionnaire results with some caution.

Nature of Work

The fifth question asked respondents about the extent to which the nature of their work affected their ability to handle domestic issues in their working hours. The distribution of responses was slightly biased towards answers that indicated that the nature of their work did not prevent most people from dealing with domestic issues. Over a third (37%) felt they could handle home responsibilities at work usually whenever they needed to; by contrast, 13% felt they could do this "seldom to never". No gender or age of youngest child differences emerged from the statistical analyses.

Separation of Work and Home

The next question asked respondents about the degree to which they liked to intermingle or keep separate their home and working lives; more specifically, the degree to which they keep work issues at work and home issues at home. They were asked to choose one from three statements, representing complete separation, free

intermingling (blurring of boundaries), or a ‘necessity based but mostly separate’ option.

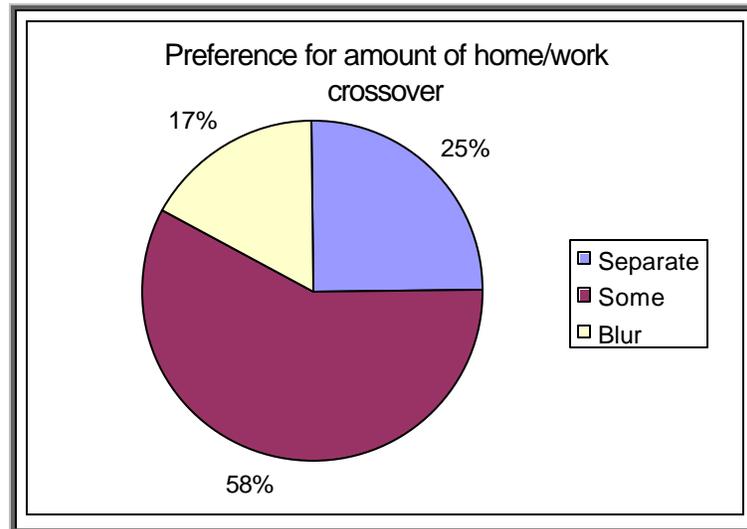


Figure 15. Degree to which questionnaire respondents like to intermingle or keep home and work issues separate.

A majority of the 64 respondents (75%) indicated they liked to intermingle home and work to some extent, although 58% (37 individuals) chose the ‘necessity based’ option rather than blurring the boundaries completely (Figure 15). However, a substantial minority (25% or 16 individuals) selected the ‘completely separate’ option. This is explored in greater depth below using the interview data, and as will be seen, there are some interesting asymmetries in the way people discuss the ‘necessity based’ option. No gender or age of youngest child differences were found in the data.

Summary of Questionnaire Data

In summary, most parents reported that they needed to carry out domestic tasks at work infrequently. However, these same people reported use of their organisation’s telephone to make non-work calls, and in general men felt it was more permissible to do this than did women. Men again were more likely to feel that their organisation permitted them to use email for non-work correspondence, but the data indicated a less clear picture than was the case for the telephone, with more people overall indicating that personal use of email was either not permitted or only to a limited degree. Most people felt that the organisation for which they worked was sympathetic to the needs of parents to address some family issues at work, and likewise, most felt that the nature of the work they do did not prevent them from being able to do this.

The majority of people indicated that they liked to be able to intermingle work and home demands (i.e. to be able to do home things at work and work things at home) but mainly only when necessary.

While these findings shed some light on the issue of home-work crossover, from the questionnaire data alone, it is difficult to draw conclusions about working parents’ true attitudes and the factors that underpin the motivation or desire to either integrate

home and work activities or keep them separate. The questionnaire was also biased toward questions that explored the intrusion of home into working life, and did not probe issues to do with work intruding into home life and the home environment. For a deeper analysis, we need to turn to both the interviews and the Day Maps.

6.2 Taking Care of Home at Work

Looking first more deeply at the intrusion of home activities into work, from the questionnaire data we might infer that working parents do not undertake many such activities at work. However, as we will soon see, this conclusion is not supported by the interview data.

Organizational Sanction

The extent to which working parents feel they need to limit the intrusion of home into work is clearly made more complex by the degree to which a person's workplace is seen to support or sanction taking care of domestic issues using workplace equipment, during working time. The questionnaire data supported the assumption that there was great variety in organisational policies towards non-work use of their resources by employees, and also that these policies may also differ from resource to resource. For example, the data suggested that non-work telephone use may be more acceptable (or be perceived to be more acceptable) than email use. It was also clear that organisations differ greatly in the degree of clarity of their rules about non-work use of their resources. Some people knew exactly what was permitted, and others had to make assumptions. The assumptions made could be wildly different: for example, the two following quotes came from two men who work in the same organisation.

"This place is pretty good. There don't seem to be many restrictions on phone use and things like that. There are days when I use the Web a lot and days when I don't use it at all." M7

"You can only use the phone for the odd little thing. That creates its own little set of pressures, because if I need to do an administrative thing, I sometimes have to zoom home to use the phone at home and do it. And anything you want – sometimes you have to go out to get it done." M11

While we did not specifically ask about Internet use for home at work in the questionnaire, the interviews suggest that different organisations had different tolerances here too. Use of the Internet at work for personal reasons varied widely. At one end, there were some who never accessed the Internet at work, because "there are complex instructions for when we can access it, and what we are and are not allowed to access" and so it was simply easier not to access it at all. Some were simply not permitted to access it for personal reasons; others did not have access at work, and others had access but no time to use it. Further, some of those who did not have access said that they would like to do so, as they felt it would be useful.

"We're not allowed to use the Internet, so if I could do this, especially when it's quiet, if there were jobs that I could do, then it would be a lot more helpful....if I could check my banking at work, that would be quite useful as well " F14

This woman added that she does her banking via the Internet at home. At the other end of the spectrum were those whose personal use of the Internet was fairly freely carried out at work. One woman reported use of the Internet to buy groceries, furniture and other household goods. Another woman reported buying some gardening goods over the Internet during the working day, and checking Amazon and auction sites quite often. One man, who was looking to move house, spoke of conducting property searches, and also of using some news sites to stay up-to-date with current affairs, although he was careful to confine these activities to his lunch break. Another man had access, but chose not to use the Internet at work for personal things:

"I don't see that that would appeal to me because if I want to do anything, then I'll do it at home...at home I'd order things on the Web...I'd tend to keep any non-work activities out of work, although on the other side of the coin I'm quite happy to do any work things at home ... Work is more sacred. There's more rules." M10

Overall, in this sample of 28, personal use of the Internet at work was relatively uncommon, with only three men and three women (21%) reporting that they did so. This contrasts strongly with personal use of the telephone at work (and also but less strongly with personal use of email). Overall, consistent with the questionnaire data, it seemed that most of the people we interviewed felt relatively free to use the telephone for personal calls. However, use of company email for personal reasons covered just about the full spectrum of possibilities from not being permitted at all, to being freely permitted.

Personal use of the telephone at work

Using the interview data and mapped days, we get a better sense of the extent to which different domestic activities were done at work. With regard to the telephone, eleven women (65%) spoke of routine telephone calls they made to or received from immediate family members (children and spouse/partner) on the days in question. Although most in the sample had their own mobile phones, most of these calls were made to or from the company phone. In some cases, employees were not allowed to have their mobile phones switched on in working hours. Many of the calls reported were just to chat or stay in touch (particularly between spouses), to check that children who were being cared for were all right, or to answer quite routine questions or demands from children.

Five women worked part time and could handle many of their calls outside their working hours; one worked from home; one ran her own business; and several had either flexible office hours or could choose to work at home. Nine of the women spoke of using the company telephone to manage and arrange their domestic affairs. Of those who worked full time, and entirely in an office, several made reference to the necessity of making calls in working hours, since the services they needed were not open outside normal weekday working hours; a few felt strongly that life was made more difficult by such restrictions imposed by "life not being set up for working parents". Specific domestic tasks dealt with by phone during working hours included arranging and paying for children's leisure time sporting activities; making child care arrangements; making dental and doctor's appointments; making holiday bookings; phone calls to the bank and for the purpose of paying bills; phone calls to other family members (such as their own parents) and other "personal family things". One said she

organised most such things from work. A few also referred to calls to spouses, necessitated by tight schedules, and the need to make last minute decisions about which parent would carry out some imminent evening activity related to the children. Two of the women said that they felt that lack of privacy inhibited the sorts of calls they felt able to make at work and both added they would feel more free to use the phone if there was more privacy. An additional two referred to the difficulty of making personal phone calls as the result of quite relentless workflows, which involved them answering work phone calls much of the time. One observed that in general she did not carry out domestic activities at work because “the day goes too quickly to even think about doing that.” The same two were also not permitted to have their mobile phones switched on while at work.

The picture emerging from the eleven men interviewed was one of substantially less personal use of the work-based phone, and also of managing family matters at work.

Five men referred to more or less routine contacts they had with family members during the day; but, interestingly, these contacts were all initiated by the other family member, and not all were made by telephone, or made to the organisation’s phone.

One man kept his mobile on (and on his person) all day, although he put it on silent mode when in important meetings. He said his wife “usually calls me a couple of times a day, just to chat, when she gets bored with her work.” She would usually call his work number, although if she really needed to speak with him, she would use his mobile. Another man said:

“My wife will phone during the day occasionally – if we need something can I pick it up on the way home? Or if there are any changes to the plans we had, or whatever, for the day. She will always use my mobile.” M8

The other instances of contact with wives tended to be similar. One of the men indicated that when his wife called him, irrespective of how intrusive it was, he “had learned it was more politically correct to forget what he was doing and attend to his wife.” Three men referred to contact with their children, again initiated by the children. Two of these came through the men’s mobiles, using either voice or data:

They’re [i.e. the calls] generally about 4.30 in the afternoon and it’s my son phoning up saying, ‘can I do this or can I do that?’ or ‘my sister’s just done this to me – can you tell her off?’ Or ‘can I go with my friends?’, ‘can you pick me up on the way home?’ Or something like that.” M8

The other reference was to a text message (SMS) from a daughter at university who wanted to chat with her father. The father observed that he would normally use a text message (SMS) to reply, setting up a time when they could chat, but on this occasion he knew her location and so replied with an instant message (IM).

Only one man spoke of domestic tasks that he carried out during the previous working day. He had settled two problems related to a gas bill and a mail order catalogue, and in addition had made an arrangement with the child minder – although he added (as if by way of explanation) that his wife was away on a training course at the time!

More men made reference to phone calls as exceptional, and again, these usually seemed to be initiated by other family members. Several men said explicitly that they try to keep home out of work as much as possible:

"I don't have many home interruptions at work, but when I do, I find it stressful. ... I try to keep home and work completely separate." M1

"I don't get many home phone calls because I try and keep it as separate as I can." M2

Personal use of email at work

Of the entire sample of 64, only six people (two men and four women) did not have access to email at work. Only one of the 28 people interviewed, a woman, did not have access to email at her place of work.

Two women (12%) spoke of using work email for personal use. One woman used her work email as her main email contact. She also had a private email address at home, but found it much easier to use the one work address for personal email as well, as it saved the trouble of consulting different in-trays. Email, rather than the phone, was also her preferred means of contacting people in general. Similarly, she accessed her work email from home (from the work email address) outside working hours. A second woman also reported using her work email address quite regularly for personal reasons, and expressed a similar preference for email over the phone.

"I much, much, much prefer email... yesterday, I sent lots of emails: a couple of personal ones [including some to her husband at work] and lots of work related emails." F5

Amongst women though, these were exceptions. Three of the men (27%) spoke of the personal use of work email, but none of this was initiated by men for the management of family matters. Rather, as with telephone calls, they were the receivers of such communications:

"My wife will email me; once every couple of days or she'll call me with some code problem which I'll fix. I don't consider it to be an interruption. I just take it in my stride. I work on the basis of instant service where I can." M10

"Home stuff, if there's a short email that I can just say yes to or no to, I will do that straight away. If it needs a lengthier reply ... I may answer a few of those during lunch or first thing in the morning ... but, lunch time for the longer kind of personal items." M5

"The first thing I do in the morning is to check my email. Mostly they're work ones, but I do have private ones from friends, too." M6

The sample of men interviewed was a small one, but the picture that emerges is one that suggests that work's email resources are not used to handle domestic chores. There were no examples from the men of the use of email for such purposes. Work email may be more freely used by men, but where it was used, the examples given did not suggest it was exploited for management of domestic responsibilities.

It is worthy of note that both women who used work email quite freely for personal use were technical/professional, as were the three men. (One of the women, and two

of the men worked in the IT sector). One can speculate that in a technical environment, email is not treated very much differently from the phone, but in environments where technology is a tool by which work is done, rather than the focus of the work, perhaps it is given a more privileged and restricted status. A small number of spontaneous observations suggest this: for example, one man indicated that in his organisation, people had to attain a certain status before they were even allowed access to email, and most who were considered senior enough did not even have their own dedicated PCs on which to access their email.

6.3 Taking Care of Work at Home

From the questionnaire it will be recalled that 58% of respondents expressed a preference to keep home and work mostly separate, but also to have the flexibility to allow each to intrude into the other when necessary. Women were not more likely than men to choose this statement as most representative of their attitude. However, the previous sections have shown that home appears to intrude far more into women's working days than it does into men's.

In this section, the attitudes and behaviours of men and women towards taking work home (i.e. doing additional work outside working hours) are discussed.

Women

If a single summary statement could be made which best captured the attitude of the majority of women interviewed to the intrusions of home or work into the other environment, it would be the following woman's observation:

"Work doesn't tend to invade home but home does invade work quite a lot." F15

Although, as has been discussed in previous sections, most of the people interviewed felt that their home lives did not intrude into their working lives, it has been indicated that in reality, there are many quite small ways in which people, and more particularly, women, do allow 'home to invade work'; for example, by organising domestic affairs at work. By contrast, this group of women interviewed were, in general, quite strict about not allowing 'work to invade home'. In reality, the expressed preference to keep home and work mostly separate, usually seemed to mean "leaving work at work" but "allowing home to intrude into work".

In fact, about a third of the sample of seventeen women expressed very strong preferences and a determination not to do this, and echoed in the statements below:

"I try not to think about work when I go home. When I leave work at 5pm, that's it." F1

"When you leave work you leave them [i.e. work concerns] behind, but if you're relaxing, you do tend to think of things in the evening. Sometimes they're helpful, and you think 'crikey, a good job I remembered that; I must do that in the morning', so I'll write myself a note. And other times I think 'oh, don't start thinking about that; you're home now.' I know the pitfalls of bringing work homewith you, and obviously the children don't want me to come home and start thinking about work things either, so I try to leave them there." F11

Only three women (18%) said that they did do some work at home, although they tried to limit this. One woman whose job was highly mobile said that she checked her work email quite regularly in the evenings in order to keep up-to-date with what she needed to do; another reported reading or writing reports, but only when absolutely necessary. The third woman, who officially worked part time said she had frequently to take work home with her at the moment, because she was not managing to stay on top of her new part-time workload. The work usually tended to be done after the children had been put to bed.

Some of those who worked part time, or worked from home, felt they had a bit more flexibility to arrange their working and domestic lives.

“Normally I would be out and I would be seeing customers, and a little bit of time would be spent on the computer at the end of the day in the evening” F6

“ I’ll come down from the office [in her home] and change the washing, and I’m always one for having a coffee. Probably every hour at least I do something else which is home related, but that is a huge positive for me that I can actually do the washing all day. Otherwise my evening was spent washing or whatever, when I was at work [i.e. before she was self employed].” F4

“I tailor my day so I can fulfil their [her children’s] requirements, as well as my work requirements” F6

“When I used to work in an office I used to begrudge doing quite a lot of evenings, because really I was just doing my full time job and being paid part time, which you just get on with. I was happy to do because I was glad they’d given me the part time role, but now I work for myself, I have no stresses about working in the evening, because what it means is I haven’t worked in the day because I’ve gone off and done something nice. And when I work in the evening, I’m earning myself the same daily rate as I would have done had I worked in the day, and it all seems very different because it’s all for me rather than someone else.” F4

Others said they did not currently take work home with them, or carry out work from home, but would like to be able to, not in order to do *extra* work, but because they perceived it would add flexibility to the way they managed and coordinated their working and domestic lives. In most of the cases of the women who mentioned this, the obstacles were organisational in origin. Most wanted to be able to access their email and/or their files from home, and thus required home phone connections to work networks – often denied them for reasons of expense and/or security, or because it did not seem to be a priority for their employees to add this sort of flexibility for their working parent employees. If it were possible, however, it would allow working parents to leave work earlier, collect the children, and then work later in the evening.

“I’d like to access my emails and files, so that when I go to work I wouldn’t have to be responding to my emails and voicemails, I could just be doing my work. I’ve been pushing for an ISDN line, and it would be really helpful.” F3

“If I could finish early and take my paperwork home, I would like to do that, but I’m limited by the technology I have at home compared to work.” F10

“If I could take my work home I would, because quite often I end up staying late to get work done. It would be great if I could take it home and do it at home, but I need the computer, which is at work, so I can’t take work home with me. I mean it’s

probably a good thing, but a lot of the time I think it would be so much easier if I could finish that off at home later on.” F14

Men

The majority of the eleven men interviewed, like the women, preferred to keep work out of the home as much as is possible. However, four men had out of hours work to do as a normal part of their routine; three had to do so occasionally; and the remaining two chose to do extra work in the evenings from time to time. Many expressed a consciousness of the hectic pace of their lives, and the scarcity of time with and for their families.

“I’d like to have more time at home for my kids, sure, but my economics doesn’t permit that. We have to both work quite long hours in order to cover our cost of living.” M10

“You feel a bit guilty because you’re conscious that for the children it’s almost like a rush through the day. I suppose it’s just juggling being able to work, do all the household things and still have time as a family to do something where we can relax.” M8

On the whole, this sample of men seemed quite successful in keeping work out of the home, from choice. Generally, they seemed to express less of the sense of a struggle than their wives in achieving this; it could be speculated that relative to their wives, their greater success in keeping the home out of work perhaps made it easier to achieve this containment of work at work. Perhaps also, because their wives tended to carry more of the responsibility for management of day to day domestic tasks, it was less of an issue for men than for women.

In addition, four of the men (36%) interviewed indicated that they had more flexibility in the time and/or location of their work than their wives. Two men were office-based and felt they had as much flexibility as they wanted. The second observed that the nature of his work did not tie him to the office during the day as it did his wife. Hence, when his son regularly forgot to take some essential item to school, it was he who had to take it to him:

“If it’s really important, I have to go home and pick it up and take it to school. It’s very stressful, and when that happens I always tell him it’s the last time.... It takes me about an hour to go home, get [the item] and make the return trip between work and school. My son calls me because I work close to home and because my work schedule is more flexible than my wife’s – my wife can’t really leave work.” M6

The other two men were not office based: one academic and one family doctor. They both had non-standard working hours and appreciated the flexibility to adjust their working hours, even if only to a small degree. This might mean working from home occasionally if they chose. One said that outside his fixed working hours, he would go home for lunch and work from his home study, and also added:

“I’m lucky that I work just off the high street. I can just pop out and within a couple of minutes’ walk I’ve got all the shops, and for that reason I do tend to do all the shopping, because it’s more convenient for me [than for his wife].” M3

The other had the same sort of flexibility, but at least on the occasion of which he spoke, felt it as a mixed blessing. He had worked at home in order to look after his daughter, who was ill. Since this was unpredictable, he'd had to re-schedule meetings and other work. He had found it very stressful, in part because he was 'cut off' from the office, without email contact with them or access to the Internet with them, and had a deadline to meet.

Other men would have liked to have worked from home either within or outside normal working hours (usually not so much for *extra* work, but for known occasions when evening work was required), but encountered technology obstacles.

"I'd like to be able to work from home if the opportunity presented itself. I can work from home but the network connection is too slow, so it's not practical.... Also there's too many distractions from home. It would be nice though, to have a high speed connection to the network at work." M10

"Not having access at home [to the work network] is a pain because for things like late night calls with the US, I have to sit at home with a pen and paper. You've got all these people around the world who can look at what we're discussing, but I can't because I haven't got access... [Sometimes] I have to come into work. Even if it's just a five minute chore, I have to drive in for an hour, and then drive back for an hour." M7

"If I had the kind of technology I have at work at home that would be bliss." M5

"I think I'd find that if I had access I would be logging on late at night to see what's going on, so maybe it's a good thing I haven't. I don't want to bring work home too much, but I know that if it's there I will." M4

In a few cases, there were active preferences not to access work from home:

"I would also like to be able to access email from home, so I could go home earlier and access my email. I know I can forward things from my work email to my home email, but I prefer not to do that. I like to keep them separate." M2

"The facilities are there for me to work at home if I want to, but I prefer not to; I like to keep home and work completely separate." M1

Having said that though, the person who made the last comment also accessed his work email while abroad on holiday for two weeks. He expected to have over 2000 emails in his in-tray when he returned to work, and in order to minimise the stress this would cause him, he logged remotely into his email and spent more than three hours deleting the junk.

Summary

The picture that emerges then, is one in which there are attempts to both limit and control the intrusion of home life into work, and working life into home, but that the crossover from one sphere of life to the other is inevitable in coping with the demands of everyday life. Factors act against such crossover, such as organisational policies restricting the use of work technology for home use, and paid working time for home activities. Conversely, home life is often viewed as in some sense "sacred" and as time that should be devoted to family. However, the need to manage domestic activities during working time, and work activities in home time are also coping

strategies that can offer working parents more flexibility and freedom to manage their demands. There are also interesting sex differences here, with women in general taking care of, and initiating more domestic activities during work time than men. Both work and home activities are carried out in the transition between work and home for both men and women, and at home, men and women could both be seen to do some work activities in order to help prepare and free up time rather than to deal with extra workload.

7. Stresses and Strains

Now that we have described how the days of working parents tend to be structured, and issues to do with managing and balancing work and home demands, we turn to focus more specifically on the stresses and strains that pervade working parents' lives. We begin with the questionnaire data to sketch out the broader picture. However, as before, we then examine the issues in more detail, using data drawn from the interviews.

7.1 General Trends from the Questionnaire Data

The section of the questionnaire that dealt with everyday stresses and strains asked respondents to indicate the degree of stressfulness (from not at all to extremely stressful) of everyday activities that had been identified in the pilot interviews as sources of stress. Since the sample being interviewed was diverse (with respect to, for example, the number and age of children, the nature of paid employment, and its hours and conditions), respondents were asked to omit questions not relevant to them. The scales investigated activities such as getting children dressed and ready in the mornings, taking them to their day time locations and collecting them in the afternoons, preparing evening meals, and handling interruptions at work and home from home and work respectively. The section also included two blank scales in which respondents were invited to name significant everyday stresses they felt had not been covered.

A battery of statistical tests was run on the stress data sets from the 64 questionnaire respondents, investigating whether particular stresses pertain differently to men and women, or to parents of children of different ages (broadly, preschool, primary school and secondary school). Again, details can be found in the Companion Report. The key findings were as follows:

- Getting the children ready in the mornings for their day time locations (school, the nursery or the child minder's) was on average, moderately stressful. Fathers and mothers did not differ in the average degree to which they found the morning rush stressful, and neither was stressfulness mediated by the ages of the children.

- Transporting the children to their day time locations was on average reported to be of low to moderate stressfulness, with neither sex of parent nor age of children affecting this. Similarly, parent's sex and the age of the children did not account for the degree to which collecting the children from their day time locations in the afternoon was stressful, although two "groups" of parents were apparent: those who did not find this very stressful, and those who found it rather more so.
- For the three questions that were asked about preparing evening meals and which asked about preparing meals for the children only, for the adults only and for the whole family, again, no differences in the degree of stress associated with meal preparation were found between mothers and fathers, or that could be associated with the age of the children. However, where preparing meals for the adults was generally relatively free from stress, preparing meals where children were involved seemed to entail higher degrees of stress, particularly for younger children.
- When asked about the degree of stress associated with managing the activities for all the members of the family, it was found to be a moderately stressful activity, and one where the age of the children did not seem to be a factor. However, the statistical test found that women were more likely than men to find this activity stressful.
- Parents were also asked about the degree of stress associated with looking after children in the evenings on their own. No gender differences were found in what was, on average, reported to be a low stress activity. However, the statistical test suggested that being solely responsible for children younger than 12 was significantly more stressful than for older children, irrespective of the parent's gender.
- Two questions were asked about handling domestic needs at work and work needs at home outside working hours. In neither case was the age of the respondent's children a significant factor in the degree of stress caused. However, while the overall average degree of stressfulness reported was middling to moderately low in the case of handling domestic responsibilities in working hours, women were significantly more likely to find this stressful than men. For handling work demands at home, no gender differences were found. The degree to which stress is associated with this was low to moderate in most cases, with a few people indicating it is fairly stressful when it happens. These findings are also discussed below using the interview data.
- Finally, parents were asked whether their working day and their time at home felt as though they were full of interruptions. Those who indicated their working and home lives were very interrupted found this on average moderately to highly stressful at work, and moderately stressful at home. No gender or children's ages differences were found.

In summary then, most of the scales found moderate degrees of stressfulness associated with many common everyday activities, the main exception being the preparation of evening meals for adults. Gender differences were found only in the

higher degrees of stress experienced by women in managing family activities, and in handling domestic responsibilities at work. There was some evidence that being solely responsible in an evening for children was more stressful when the children are young (less than 12) and a more tenuous suggestion (tenuous because the sample sizes were very small) that preparing meals for young children could also be somewhat stressful.

Participants were given the option to state and rate any forms of friction or stress in their lives that were not addressed in the questionnaire. Approximately 36% named additional common stresses, and generally rated them as highly stressful. Additional sources of stress outside work given by questionnaire respondents included putting the children to bed, giving the children a bath, managing children's leisure activities, pets and the home, time management (for self, spouse or partner and children), food shopping, commuting to work by car and public transport and meeting deadlines to collect and deliver children at the right times. Work stressors included the management of people, and coping with change as well as getting the balance between work and leisure time correct. These findings are in accordance with some of the reported daily stresses experienced by workers, according to numerous studies that have explored workplace stress (Folkman and Lazarus, 1984).

Attitude to Working Hours

Finally, two additional issues in the questionnaire are of relevance here:

One question asked respondents about their satisfaction with the number of hours they worked, and the flexibility of their working hours (Figure 16). A total of 76% of the responses were equally divided between the statements "I prefer to work than not to work at all, but would like to work fewer hours per week than I currently do" and "I prefer to work, and am happy with my existing working hours." Only 11% said they would like to stop working immediately if they could. The majority of these were men. In fact this option was chosen by just over one in five of the men in this sample; for the sample's women, the rate was equivalent to one in twenty! Around 46% of the men in the sample would prefer to work fewer hours; only 4% perceived a need for greater flexibility in their hours. By contrast, around 18% of women wanted more flexibility in their hours, and about 45% declared themselves happy with the number of hours they work.

Since we know that more women in the interview sample worked part time than men, the data were subjected to statistical analyses to explore whether there was a relationship between attitude to work and number of hours worked. The 64 participants were divided into two groups: broadly, part time (defined for our purposes as between 20-34 hours a week); and full time (35 or more hours per week). Statistical analysis yielded a highly significant result, indicating very different preferences between full and part timers. Broadly, most part timers (67%) chose the statement "I prefer to work, and am happy with my existing working hours" as the one which best reflected their feelings. A further 19% would like more flexibility. By contrast, only 26% of full timers were happy with their working hours. 51% of full timers agreed that "I prefer to work than not to work at all, but would like to work fewer hours per week than I currently do" compared with 10% of the part timers. 14% of full timers and 5% of the part timers agreed that "If I could stop working now and stay at home full time, I would." The overall picture that emerges is therefore that

most part timers are happy with their working hours, few would not want to work at all, but a fifth would like their hours to be more flexible. Around half of the full timers would like to work fewer hours, but a quarter were happy with their hours, while around 1 in 7 would like to stop working altogether.

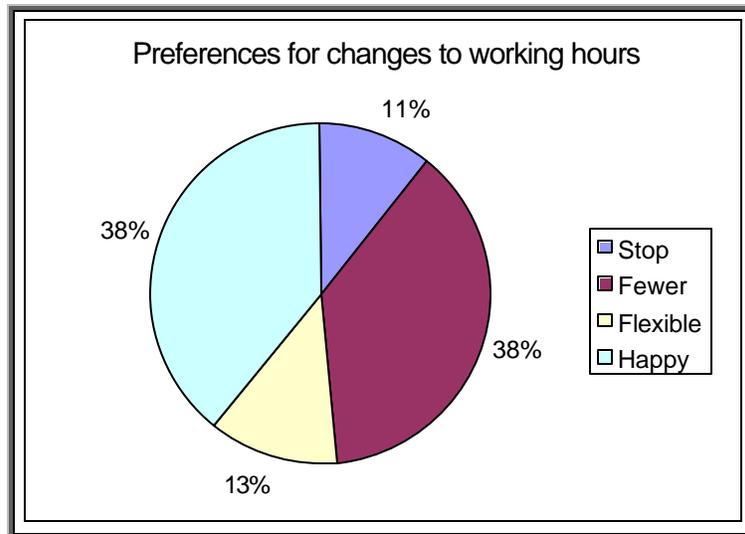


Figure 16. Preferences for changes (or not) to working hours.

The overall picture is therefore one in which men work full time but would like to do less; many working mothers either work part time and are reasonably happy with that; although a sizeable minority of women would like more flexibility in their hours.

Amount of Free Time

A final subset of questions explored how much relaxation time alone respondents said they had in an average working day, and the degree to which they felt content with this. They were asked the same questions in respect of relaxation time alone with their spouse or partner.

Nearly half of the sample (47%) said they had less than an hour's time just for themselves; 6% said they had none, and 9% more than two hours. Their satisfaction with the amount of time they had was highly biased towards the 'too little' end of the scale: 64% felt moderately to strongly that this was too little. By contrast, 16% felt that this was plenty of time, or nearly so. There were no gender or age of child differences, either in the amount of time, or the degree of satisfaction reported.

In addition, 44% said that they had less than an hour's relaxation time per working day with their spouse or partner; an additional 34% said they had between one and two hours together. 78% therefore reported two or fewer hours' relaxation time together on working days. 8% reported no relaxation time together. The distributions echo those of the previous question on time alone. Reported degrees of satisfaction were highly biased towards the 'too little' end of the scale: 66% felt moderately to strongly that the time they had available for relaxing alone with their spouse or partner was too little. 11% felt the time available was plenty, or nearly so. No gender

or age of youngest child differences were found for either the amount of time available, or satisfaction with it.

In summary, men worked longer hours than women, and more of them would like to be able to stop work immediately if they could. More women than men worked part time and were generally content with the hours they worked but would appreciate more flexibility in those hours. The majority of working parents said they had two or fewer hours alone or together with their spouse/partner for relaxing in, and the majority felt that this was insufficient.

7.2 Stresses and Strains Throughout the Day

Using the interview data, we can look in greater depth at the particular stresses and strains associated with the five different phases of the day. As the interviews were semi-structured, respondents were free to discuss everyday stresses and strains in an open-ended way. Because of the exploratory nature of the interviews, the extent to which stresses and strains were mentioned varied among individuals, and because of the small numbers involved, these data have not been subjected to statistical analysis. The answers are rather used to flesh out the picture begun in the questionnaires of the strains and pressures in everyday working family life.

Home AM

Morning stresses revolved around the pressures of getting family members ready in order to leave the house on time. One cluster of reasons formed around the difficulties of doing all that has to be achieved to get the children ready for the day, as well as the parent getting ready for work.

“The regular stress points I feel are getting children out of the door in the morning and getting them to do their homework.” (F9 – mother of 7 and 8 year old children)

“probably at about 8am when everything’s mayhem, [my husband’s] gone to work, I’ve been abandoned, and I could have two fractious children which I somehow have to bend and fold into the car and get them into nursery.” (F6 – mother of 2 and 4 year old children)

“When I’m rushing in the morning, I feel guilty that I haven’t made their day start much more calmly.” (F4 – mother of 4 and 6 year old children)

“I suppose the morning really. ... I think just having to get to work, having to make sure that the children are up and ready, also trying to think whether there’s anything I need to remember to do.” (M9 – father with three teenagers)

“They [mornings] are quite stressful to be honest. Sometimes I get up too late, around 7.30. then we have to get out of the house by 8 o’clock. Then it’s really stressful. I have to push my son hard and remind him all the time, ‘hurry up, hurry up.’ That’s stressful.” (M6 – father of a 10 year old child)

“Getting the children out of the door in the morning..... the baby screaming is a stress within itself, and my daughter is usually up to no good.” (M1 – father of a baby and a 2 year old)

Two women mentioned that some types of stresses (deriving from being responsible for and having to do things for) children diminished as they became older, or some times in the day became easier to manage, for the same reason. For example:

“Mornings aren’t particularly stressful now due to the children being older. Therefore, they’re fairly independent and can do things for themselves. When they were younger, mornings were more stressful.” (F14 – mother of a 11 and 13 year old children)

In our sample of 28 interview participants, eight couples staggered their working hours. For example, one parent may work from 7am to 3pm, and the other from 9am to 5pm. The later starting parent gets the children up and ready for the childminder’s, the nursery or school and takes them there; the early finishing parent is able to collect them. There was no discernable pattern to this in terms of which parent carried out which ‘shift’, and it seemed to be determined by work requirements and flexibilities rather than by gender. While this arrangement worked well for the family, in terms of being there for the children at the right times, there are certainly stresses involved with it. However, while these stresses were particularly prominent for the responsible parent, they were not confined to them.

Transitional Stresses

The most frequently mentioned source of stress, involving a majority of the people interviewed (17 of 28, or 61%) was described in the context of transitioning from one place to another within tight time schedules. Ten of seventeen women (59%) spoke of such stresses. For different women, these occurred at different times of the day and for different reasons, related to the ages of their children and the specifics of their work and domestic situations. Seven men of the eleven (64%) interviewed also discussed transition stresses.

Following on from what could be stressful mornings, there was often considerable pressure in the journey from home to work, especially for the parent responsible for dropping children at their schools or day care locations. This could be exacerbated by the uncertainty of getting to work on time as the result of traffic problems and was particularly a problem for those people whose work hours were inflexible. This might mean that being late to work would have knock-on effects throughout the day.

Some of the evening transitional stresses were caused by the difficulties in leaving work on time in order to pick up children; others by peak hour traffic jams (which, although they are a daily feature, are unpredictable in the degree to which they will prolong the homebound commute.) Being late to pick up children was a major stressor for working parents – and the younger the children, the greater the stress experienced.

“the worst time is the afternoons, and trying to finish off work to leave on time to collect my son from the nursery.” (F7 – mother of a 3 year old child)

“Trying to get back in time for the girls. Traffic jams. The one person you can’t let down is a 2 year old and a 4 year old. Anyone else and they can cope with it, they’re big enough to cope with it, but if you’re late picking them up then it’s very stressful.” (F6 – mother of a 2 and 4 year old)

“And when they get to school and they’re 5 and 6, you’re going to get tears, and they’re going to be horribly upset if you’re not there on time. And you’ll incur the

wrath of the head teacher if you're not there on time." (F11 – mother of 10 and 12 year old children)

Some parents mentioned financial penalties for lateness, which added to the stress of being late:

I don't panic as much as I used to in work. When they were with child minders, pre-school, there was a financial requirement for me to get to the childminder's by 4.30, because she'd charge me for another hour if I didn't get there till 20 to 5, because I'd gone into the next hour." (F11)

Apart from the pressures associated with being able to be in the right place at the right time to collect the children, transitioning from work to home could be stressful if it threatened to compromise family time together:

"Yes! Getting home. If we are to eat together as a family, I need to get home before the evening activities start, that does become quite a problem.... you can leave on time, you ring up and ask 'am I on time?' but then run into a traffic jam." (M11 – father of 2, only one of whom, a 16 year old, is still at home).

Two other men mentioned the unpredictability of the traffic flows, and consequently, of not being in control of when they would get home, or be able to pick up their children, as daily stressors.

Work Stresses

Nine of the seventeen women (53%), when asked about their day to day stresses also mentioned work-related stresses in addition to or to the exclusion of home stresses. A cluster of them pertained to being interrupted, being too much in demand, having too much to do, or being under time pressures at work.

"I don't get stressed easily, but I suppose running around all day without a break gets a bit wearing –I'd like to have five minutes to myself." F3

"The production problem was fairly stressful. These things sort of descend on you and you have to deal with it, now, now, now" F5

"You get a lot of days which are constantly non-stop and you don't get two minutes to think about what's going on it's just a case of working against time as I see it.... people don't like to be kept waiting, so its just sort of get it done, you don't want things hanging over you." F1

"If you asked at work, they'd say "yes, she's helpful and lively and so on, but I come home, and I'm frazzled by it all." F11

A second cluster of work stresses related to problems with computing systems; for example, system failures, unsuccessful upgrades, and new software which put obstacles in the way of getting work done.

One woman found her dependence on people who were unable to manage meetings effectively a considerable source of stress, because it undermined her ability to leave work on time.

"The work-home stress is the irritation I feel at having to leave meetings because they've been mismanaged and it's important to me to go home." F9

For the men, stress originating from work was the most frequently mentioned source of day-to-day stress. Nine of the eleven men (82%) spoke first of work stresses in response to the question about general day to day stresses. The main sources of this stress were interruptions, with observations such as “interruptions are a big source of stress” coming from five men.

“As soon as I get to the office, people are queuing up to ask me something.....You don’t get the chance to settle and get yourself ready for your own day. They’re all very good at it – standing by the desk and saying “I’m sorry I’m interrupting” and they can clearly see you’re doing something but it doesn’t stop them actually saying it.” M8

“...people having access to you and the expectation to reply quickly, and you never manage to achieve the targets you set yourself for each day because of the constant interruptions.” M5

Another explained that interruptions caused him “irritation and anxiety”, and others that incessant interruptions caused them to get behind the demands upon them: the feeling of trying to get back on top of the work load, or to achieve the necessary targets, is stressful. One man spoke of how he did not read his voicemail, and did not give out his mobile phone number except to key people, in order to avoid the stress of constant interruptions, with the demands they contained. He also observed:

“I’ve had to learn how to deal with the whole thing of stress and how it affects me very clearly. And had to remove some of the things which used to cause it. So my To Do list used to cause stress, so it had to go..... just simply knowing it was there, and these things with dates against them and everything else. The one thing you can’t get out of me is a commitment to complete a piece of work by a certain time..... that’s one of the reactions I have.” M11

Others spoke of tight schedules, long hours, workloads that felt unreasonable, high pressure jobs with multiple demands, and excessive amounts of email (that need processing) as other significant sources of stress.

Home PM Stresses

Both women and men spoke of evenings being another main source of day to day stress. Stresses and strains here seemed to cluster around fatigue, and lack of spare time. This was often a result of feeling tired at the end of the working day, and having to cope with family responsibilities, particularly for the parents of young children.

The most stressful times of the evening revolved around mealtime, bath time and bedtime for the children. These demands could start as soon as arriving home:

“It’s usually the first minute I get through the door, because I’m just through the door and the cat’s looking for her tea, and the kids are trying to tell me about the things they’ve been doing, and if my husband’s there as well he’ll be telling me to hurry up and go and get changed, because he’s got the tea organised, and everybody’s all talking to me at once....” (F14 – mother of 11 and 13 year old children)

Mealtime imposed many different pressures on these parents, especially if it meant catering for the different tastes and complicated schedules of the family:

"It's usually pretty stressful [around 5 o'clock], because we have different activities that go on, and I'm not a great lover of cooking. We eat to refuel, and when the children are at you with "what are we going to eat?" and all that sort of thing, that's pretty stressful for me. I suppose it's my job. I work with 2 to 4 year olds, and it's noisy and they're at you the whole time. And then you come home, and I feel sorry for [her children] really, because the last thing I want is for them to say "muu-uum" . It's quite hard really. Well, it's not hard, I enjoy it, but it is quite a stressful thing." (F17 – mother of 11 and 14 year old children)

"And getting home really. When I get home, it's what to do for who really. Getting the food prepared. Because [the baby] being so young, he has something different. [Our daughter] doesn't like what we have, so she has something else, and then I do whatever I've decided we have. I find cooking quite stressful because I have to do so many things.... [the baby] is quite easy because I just bung it in the microwave and give it a quick mush and give it to him, but [our daughter] is more the difficult one. She's at a difficult age." (F2 – mother of a 3 year old and a baby)

"If I can achieve that [one meal for the whole family] I'm really pleased, because it takes out so much stress from cooking twice. I really, really don't like cooking twice." (F4 – mother of a 4 and 6-year-old)

Young children imposed extra stresses both at bath time and bedtime. Bedtime for very young children especially caused problems for tired parents:

"Usually bath time to be honest, bath time's hell... by that time everyone's tired, everyone's had enough, but tired children aren't logical. They just string you out and wind you up ... yes bath time's stressful" (F5 – mother of a 4 and a 7 year old) The same woman added: "Evenings, children in the evening, especially [our daughter] because she gets stroppy."

"Depending on how the children are, bath time can be stressful; or if they're tired and very irritable and parents are tired and irritable, it's not a very good mixture..and things seem to improve significantly when they've been put to bed." (M3 – father of an 18 month old and a 3 year old)

"I suppose, just being tired, because it can be a long day if I've gone to work. I get home from work and I am tired and then I've got [the baby] and although I enjoy it, sometimes it is tiring, especially if he doesn't go to bed. Sometimes he doesn't go to bed until 9.30, so I've had to entertain him until quite late in the evening, so that is a stress I have." (F3 – mother of a 5 month old baby)

"Also, we managed to get the baby to sleep on time.... you know what children are like, they don't want to go to sleep sometimes..... After a long day sometimes that can be a bit stressful." (M2 - father of a 3 year old and 5 month old)

"... when I put [the baby] to bed and he doesn't want to go to sleep and he cries about it. That's quite stressful, because I'm tired, and I just want to go to sleep." (F3 - mother of a 5 month old baby)

All of these evening demands unsurprisingly left parents feeling over tired and drained at the end of a working day. Most reported ending the day in front of the television as a low energy way of unwinding before bed.

7.3 Other Stresses

Finally, there were a variety of more general stresses and strains mentioned by both men and women not necessarily related to particular times of the day, but rather more all-encompassing features of their daily lives. For example:

- ***Changes of routines (actual and anticipated).*** Several parents referred to stress occurring as a result of changes in routine. One mother, for example spoke of the difficulty of trying to keep to the family's normal routine when external circumstances had changed around them. For example, the school holidays mean the new arrangements for child care had to be made, and the pattern of regular activities available to children would change, causing additional problems for parents in remembering the changes and managing new routines. Another mother, whose husband travelled abroad for work several times a year referred to the extra strain and time pressures upon her that resulted from a husband who usually helped with the morning routine being disabled by jet-lag. A father of two, whose wife was currently on maternity leave, anticipated the difficulties he would face when his wife returned to work. Routine clearly greases the wheels of family life, helping it to run smoothly.
- ***Dealing with children's conflict and bad behaviour.*** Several parents referred to conflict in the family and ill temper on the part of children as rather stressful. In one case, arguments between the children ("they're at the age when they don't get on") were common. In several other cases there was conflict either between siblings, or between parents and children, over access to and use of the family's sole phone line. Sibling arguments often took the form of bickering over whose turn it was to talk with friends on the phone or surf the Internet. Conflict with parents was similarly either over competition for access to the phone line, or alternatively, of parents trying to restrict what they perceived as excessive amounts of time surfing the Web, playing games or using the computer. A couple of families also referred to the pressure they felt to "get connected" – either coming directly from the children, or originating in feelings that their children were missing out because they were not Internet-enabled at home. Two parents also spoke of friction over getting their children to do their homework.
- ***Guilt.*** Another difficulty specifically mentioned by women was the guilt they felt at being a working mother. This did not seem to depend on whether they worked because their financial circumstances mandated it, or because they worked for personal fulfilment. Although guilt was not deliberately probed in the interview, it was often spontaneously mentioned when on the topic of stresses and strains. By contrast, none of the men interviewed spontaneously mentioned any sense of working parent guilt.

"I do feel quite guilty sometimes being a full-time working parent that perhaps I really ought to be at home with my children at half past three and sit with them for an hour to do some work. As it is, on a normal working day, we're not home till about six o'clock on a Monday and the days when they're not doing things, and by then they really don't want to be bothered [with doing school work]" F12

"I'm not really a stressy person, but the things I find stressy are the guilt you feel about being a mother, I just think once you've had children you're destined to feel guilty and that's how it is. You can never quite do the perfect thing, and it's pointless really feeling guilty because to my mind the perfect mother just has all her time for

her children and just spends all her time making cakes... But I would be such a foul person if I did that, because I need my work and I think the children are much nicer as a result. Because they've got to learn to sort themselves out a bit and just fit in with everything, and be civilised, and live with us all. But for some reason even if you know that you still feel guilty." F4

"I'm still dragging this guilt around. Being a working mother from when they were babies, and I had to give them to a childminder's, I've always had that working mother guilt from when they were babies in the Moses basket. And the mother-in-law said "you can't possibly be anticipating going back to work and leaving my grandchild with a childminder!" F11

- **Being (too much) in demand.** The parents were also asked about the sorts of demands they had on their time, taking work and home into account, and how they felt about them. More women than men spoke of the difficulties they faced in trying to fit into the day all their work and home responsibilities.

"I like the fact that I'm in demand, but sometimes you wish everybody would just go away and leave you alone for five minutes. But I think women can deal with it much better than men anyway. They can deal with doing a lot more things at one time than men. Like I say my husband just has to worry about his work. He doesn't worry about what the children are doing. I take care of that." (F14 - mother of 11 and 13 year old children)

"I think it's appalling! Everybody demands on me. It'd be nice to say 'Stop! Do it to someone else. Let somebody else do it.'" When she was asked what "it" was, her answer included the following: "A night off would be nice..... My husband to take more control in evening chores – cooking, getting the kids ready for bed." (F2 - mother of a baby and a 3 year old)

"It's hard, and it's hard to delegate really..... I find it hard because I'm the one with the diary and I'm the one who holds everything together." (F17 - mother of 11 and 14 year old children)

It will be recalled that from the statistical analyses of the questionnaires that men and women did not seem to find particular events we asked about more or less stressful, except in the cases of managing family activities, and handling home tasks at work, when women seemed to bear the brunt of the stress. The interviews, given the open-ended nature of the questions asked, would seem to confirm the questionnaire findings.

Summary

The picture that emerges from these data is one that suggests that while many parents are content with the life choices they have made, they are somewhat burdened with too many responsibilities and commitments; indeed that many, and in particular women, feel somewhat beleaguered. Although the younger the children are, the harder it is for parents, the challenges and obligations they meet with young children merely give way to a different set as the children grow older. However, transitioning from home to work and work to home in a timely way in addition to managing all the demands of each context (e.g. at home, getting children and all their things ready; and at work finishing a meeting or a piece of work on time) are significant stressors for men and women alike.

8. General Findings on Technology Use

In this section, we look closely at the technologies that these working parents owned and used in home and work contexts. Further, and related to Section 6, we look at the extent to which home and work use was accomplished with the same or different devices or tools. All of this will provide a foundation for looking more closely later at technologies used while mobile (Section 9), at technologies used for communication (Section 10), and at technologies used for reminding and planning (Section 11).

To gain an overall picture, we begin by looking at the number of participants who reported using, or not using, the range of devices, objects and services listed in Figure 17. The technologies and services we were interested in included computer technologies, other office technologies (printer, scanner, and fax), technologies for planning and reminding, capture technologies, and communication devices and services.

For each kind of technology, we asked working parents whether they owned and used it, and if yes, whether this was for work purposes or for home purposes, or both. If the answer was “both”, we then asked them to then specify whether these were separate items (or services) for home and work, or whether they were the same. Note that this question was not asking about *location* of use, but *purpose* (home or work). For example, people may use different mobile phones for home and work, yet they are not necessarily used in those locations.

As is shown in Figure 17, we found the most commonly used devices or services with over 95% of respondents reporting use were: the landline telephone, the desktop computer, the printer, email, and the Web.

The least used were the laptop and palmtop computers with less than 40% and 20%, respectively, of respondents reporting using these.

In the sections that follow, we look at each of these devices in terms of use categories more closely, to examine, among other things, the extent to which these devices were used for work purpose, for home purposes or both.

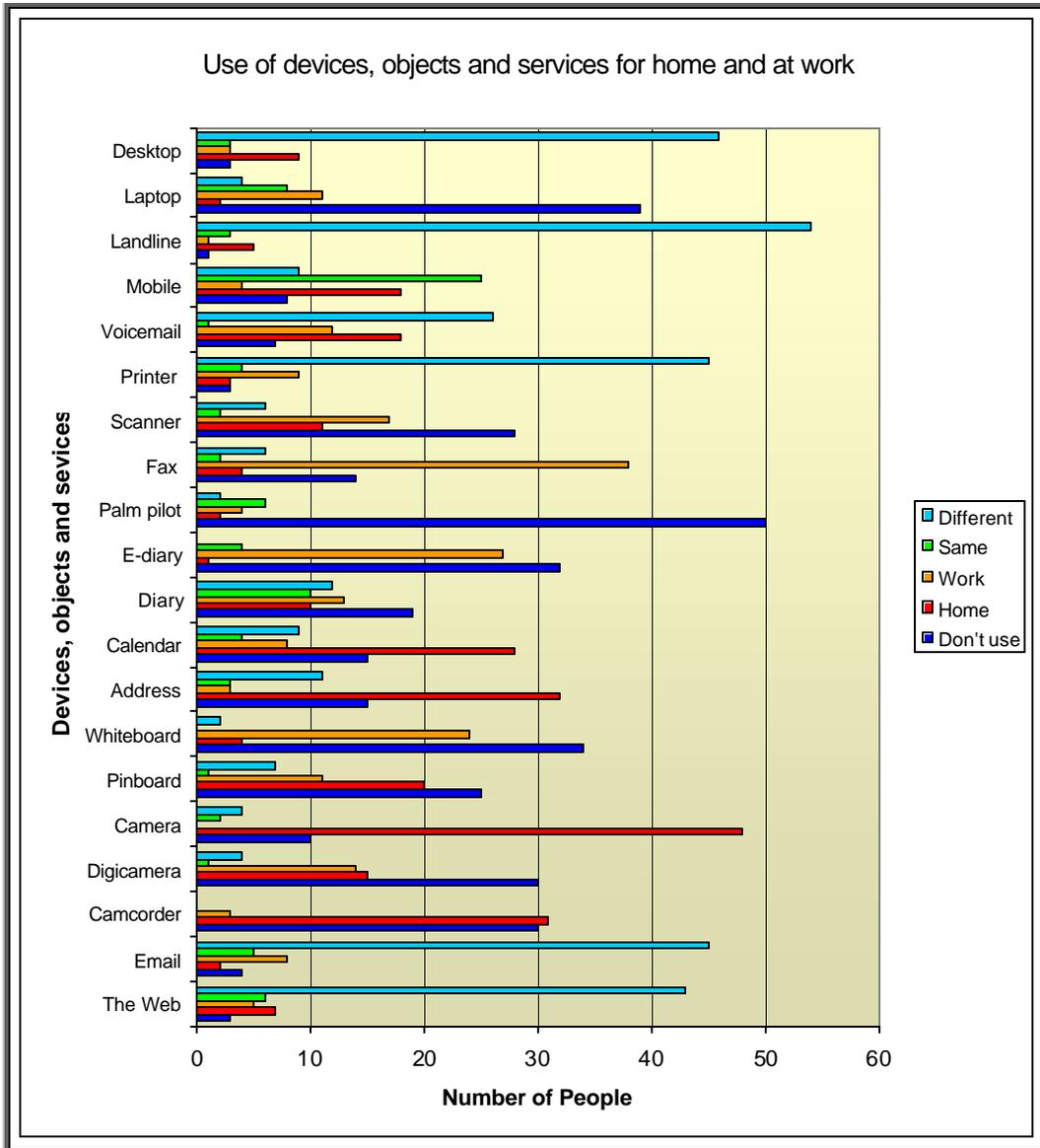


Figure 17. The number of questionnaire respondents reporting to use different devices or services for work only, for home only, or for both purposes. If for both, respondents were asked to indicate if the same device or different devices were used for work and home purposes.

8.1 Computer Use

Figure 18 describes in more detail the use of computers by the questionnaire sample. It shows that the desktop computer was the most popular form of computer (used by over 95% of the sample). Less popular was the use of a laptop computer (40%), with even fewer using a palmtop computer/electronic organiser (20%).

With regard to use of the desktop computer, the majority used two different computers, one for home and one for work. This was then a highly segmented technology. Very few people used a desktop computer only for work (5%). In fact, if they used only one desktop computer, it was more likely to be for home only (15%).

Laptops, when used, were used about half the time for work purposes only, and about half the time for both work and home purposes. In the latter case, while two thirds of the time the same laptop was used for work and home, surprisingly, one third of that time, these working parents had different laptops for work and home. Thus, while it may be a physically mobile device, the laptop when used, is only used as an artefact which serves both home and work purposes less than a third of the time.

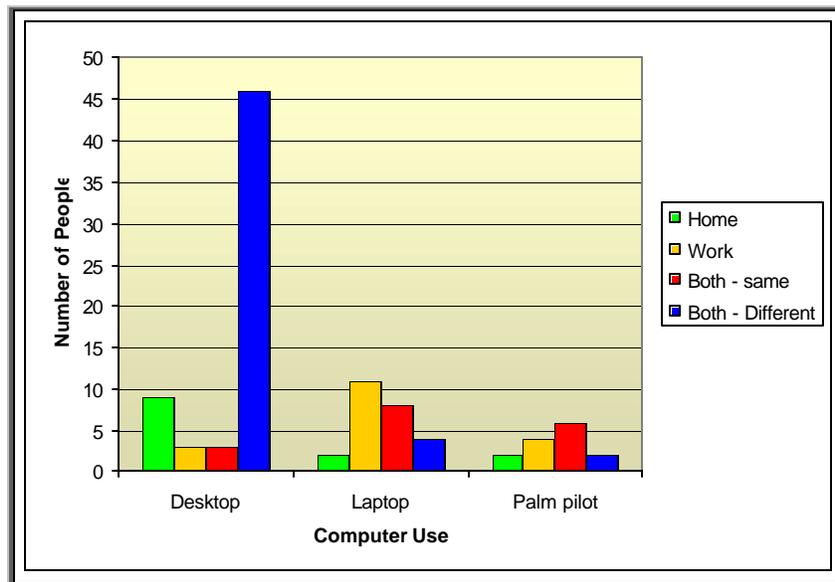


Figure 18. Frequency of use of different kinds of computers, for home purposes only (green), for work purposes only (yellow), and for both home and work. Red indicates integrated home and work use; blue segmented home and work use.

For the fourteen people who reported using a palmtop computer, more people used it solely as a work device only compared to as a home device only. Additionally more than half of those owning palmtops (eight of them) used them for both home and work, but two of these eight people owned and used different devices for home and work.

8.2 Printing, Scanning and Faxing

Over 95% of participants reported using a printer with 80% reporting use for both home and work reasons. For the majority this was a different device in the two locations: the exceptional few who did use the same device can be explained by their self-employment or working from home status. This points to the major infiltration of the printer into the home. A very small percent had a printer solely for use in the home and slightly more exclusively in the workplace (see Figure 19).

Only about 56% of people reported using a scanner. Scanners tell quite a different story to printers, firstly in being less ubiquitous, but secondly in that fewer than 25% of respondents used them both for home *and* work purposes. A more common trend was either to have one only for work purposes (46%), or for home purposes (31%), but not both. Of those who did use them for both home and work, the majority used different devices and only home workers or the self-employed used the same device.

Almost 80% of people reported using a fax machine. The fax machine provides us with yet again a different picture of use from printer and scanner. For this device, respondents reported that its use was almost exclusively confined to work purposes as a dedicated device. A small number, four participants, used fax machines solely in the home. A few respondents additionally used the device in both the home and workplace, with the majority of these using different devices across locations, and only a few home-workers used it for both purposes on the same device.

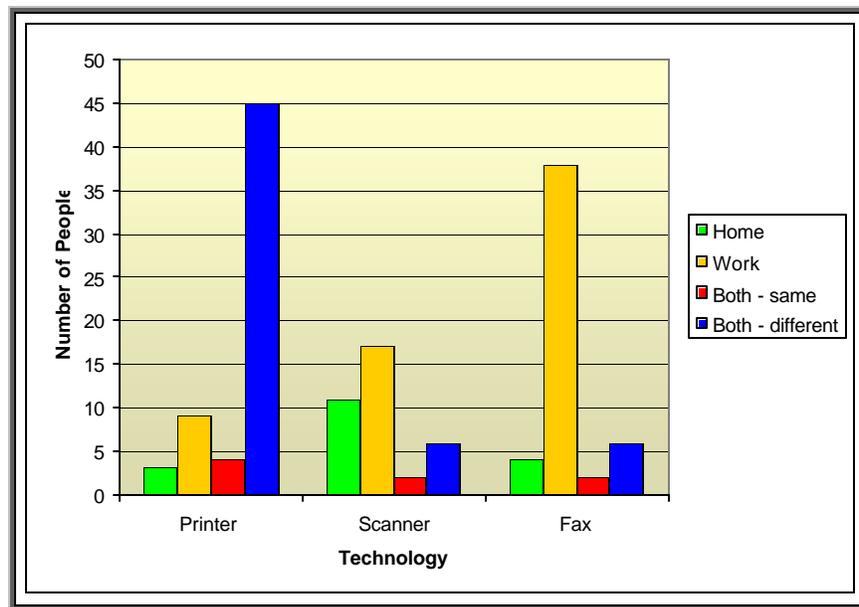


Figure 19. Frequency of use of other office technologies, for home purposes only (green), for work purposes only (yellow), and for both home and work. Red indicates integrated home and work use; blue segmented home and work use.

8.3 Organising and Reminding Tools

We now look at tools usually associated with time management, reminding and planning activities, although each of these tools may well serve other purposes (see Figure 20). For example, we have already discussed the use of the palmtop, but include it again in this category as one of its primary functions is to support planning and reminding. In the case of palmtops we have already discussed that less than a third of respondents used them, and that this was mainly for work only, or for work and home purposes on the same device. By comparison, we found that half of respondents used an electronic diary on a desktop or laptop computer. This was

overwhelmingly work-related only, although some used the same work-based diary for some home purposes. No one used different computer-based diaries for home and for work.

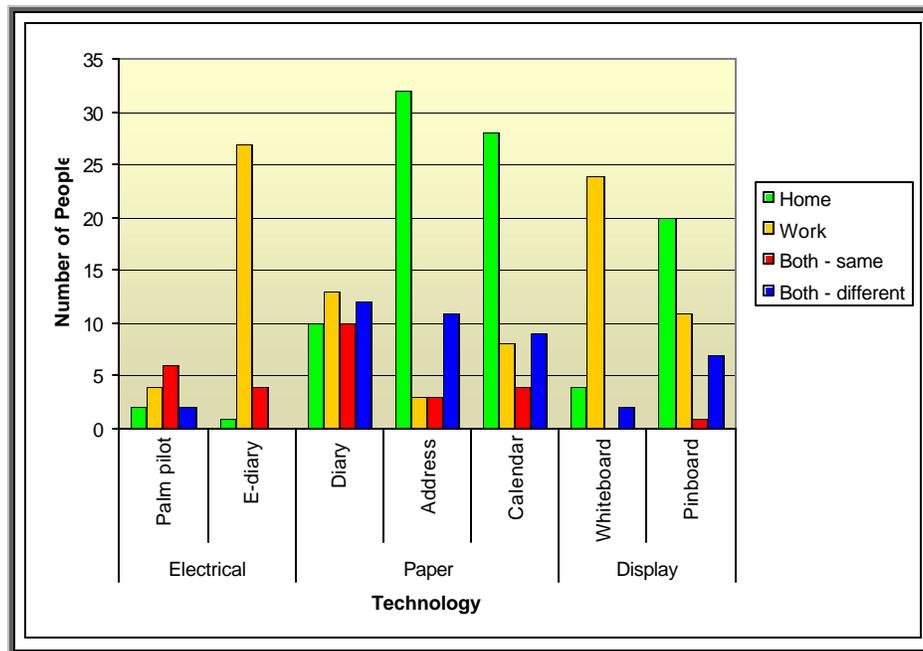


Figure 20. Frequency of use of organising and reminding technologies, for home purposes only (green), for work only (yellow), and for both home and work. Red indicates integrated home and work use; blue segmented home and work use.

Whereas, electronic diaries were used at most by half of the population (and this was mainly for work purposes), the majority of respondents reported using paper-based artefacts: paper diaries, wall calendars, and paper address books:

- Over 70% of respondents reported using a paper diary. Further, use of paper diaries was diverse in that there was no clear favoured pattern of use: respondents were almost equally likely to report home use only, work use only, the same diary for work and home, or different diaries for work and home.
- Over 76% of respondents reported using a wall calendar. The majority here was for home only (58%) with an additional 8% using the same calendar also for work purposes. Wall calendars were also sometimes used exclusively for work reasons, and sometimes two different ones were used for work and home.
- Over 76% of the sample used a paper address book. Paper address books follow a similar pattern to wall calendars, with the majority of our working parents using them exclusively in the home. Use of different address books in different locations was the next biggest category with eleven participants. Work only use and integrated home-work use were less common.

With regard to other kinds of display artefacts, we found that only 47% of respondents used a whiteboard, and this was mainly solely for work reasons. Use in the home was less common, but when it was used in the home, it was dedicated to this purpose. Over 60% of respondents used a bulletin or pinboard, half of these only for home use, and almost a third (28%) solely for work.

8.4 Recording or Capture Devices

Looking at recording or image capture devices (Figure 21) we found that, unsurprisingly, conventional cameras were the most commonly owned item (owned by 84% of respondents) while just over half of respondents owned either a digital camera or a video camera.

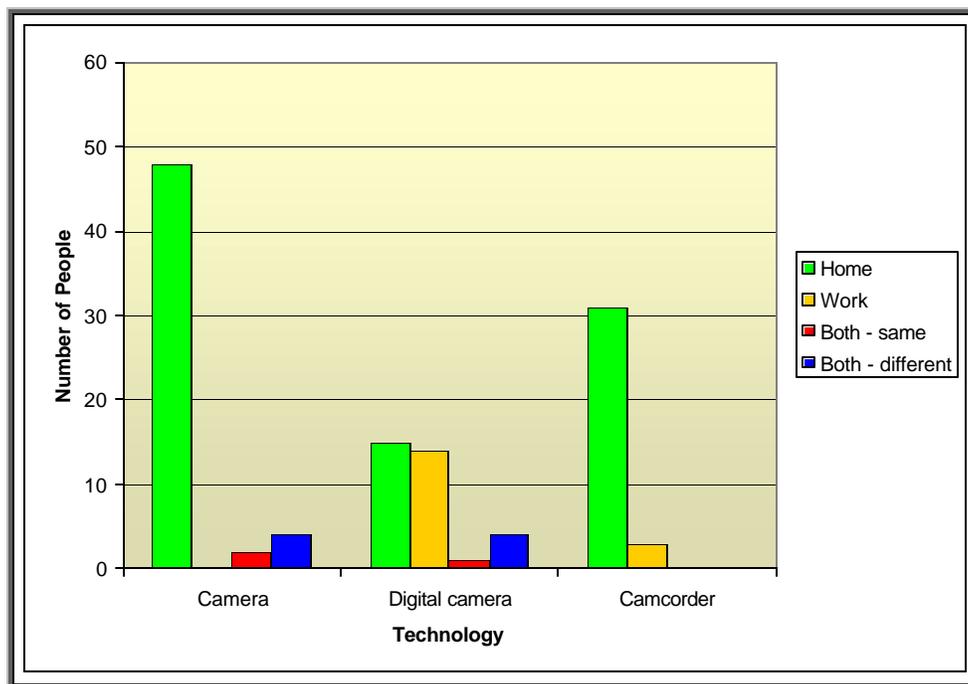


Figure 21. Frequency of use of capture devices for home purposes only (green), for work only (yellow), and for both home and work. Red indicates integrated home and work use; blue segmented home and work use.

Here the pattern of use for both the conventional camera and the video camera was quite clear: they were mainly used for home purposes. More surprising is the use of digital cameras finding themselves into the workplace. Almost as many respondents reported use of their digital cameras for work reasons only as for home reasons only. The increasing use of digital cameras for work purposes is a topic we have researched and reported on in more detail in other research (Brown et al., 2000).

8.5 Communication Devices and Services

Almost all the respondents used all of the communication devices or services we listed with the following proportions indicating the overall high frequency of use:

- Landline telephone 99%
- Mobile telephone 88%
- Answer phone or voicemail 89%
- Email 94%
- Web 95%

Not surprisingly, fixed line telephones were mainly used as different devices in work and home locations. The pattern for mobile phones was quite different, however. Here, approximately three-fifths of respondents used them for both home and work, with the majority of these using the same device for both work and home. However a smaller percent used different phones, presumably due to restrictions that organisations placed on the use of work mobiles. In addition, a substantial proportion of respondents reported using the mobile phone for home reasons only (32%) highlighting the extent to which the mobile phone has found its way into home life (see Figure 22).

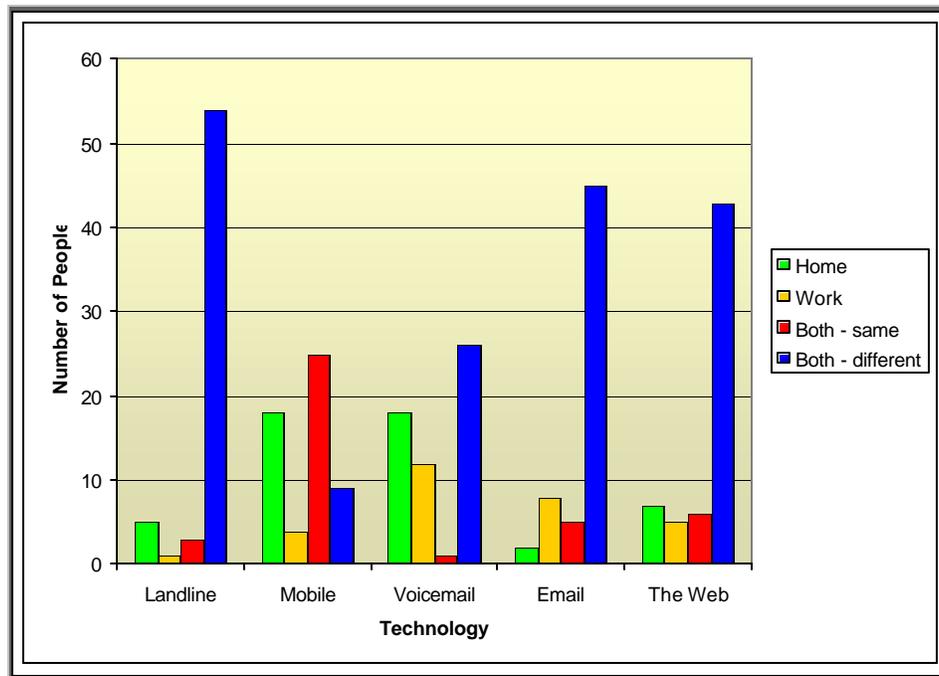


Figure 22. Frequency of use of communication technologies for home purposes only (green), for work only (yellow), and for both home and work. Red indicates integrated home and work use; blue segmented home and work use.

The use of answer phones (answering machines) or voicemail was also diverse and spread across work and home. Here, respondents were most likely to have the use of an answer phone or voicemail at both work and home. In addition, approximately

one-third of participants had use of an answer phone exclusively in the home, while the remaining twelve participants used them at work only.

With regard to email, all but four people reported using it. Here, its use was highly segmented, with people usually using a different address or account for home versus work purposes. Exclusive use for work was the second biggest category, but this was for only 13% of respondents.

As with email, the use of the Web was pervasive with only three respondents not using it. The responses follow a similar pattern to email use with the majority of users having separate providers for home and for work. Here, however, 10% did use the same provider for home and work.

8.6 Sex Differences in Technology Use

Tests for sex differences on frequency of use, and pattern of use were not run on all technologies, but focussed only on mobile phones, electronic organisers, paper diaries, wall calendars and paper address books. The reason for this, as we shall later see, is that there appeared to be interesting differences in the way these were used that emerged from the interview data.

In terms of number of men versus women who reported using different kinds of devices, the results indicated:

- More women reported using mobile phones and address books than men.
- More men reported using palmtop computers than women.
- No significant differences existed for use of wall calendars or paper diaries.

Further analyses were conducted to understand any differences between the sexes for the way in which each of these five technologies was used (for home only, work only, integrated home and work use, or segmented home and work use). There were problems of small sample sizes for some of these tests (see the Companion Report), however, despite this, it remains interesting to see that for both wall calendars and paper diaries, differences did exist:

- Women used wall calendars much more than men in the home but men used them more in the workplace.
- For paper diaries, women used them less for the sole purpose of the home than men but much more than men for both locations using both the same and different devices.

These findings are more meaningful when we look more closely at both communication patterns (Section 10) and reminding and planning behaviours (Section 11).

8.7 Home and Work Technology Segmentation

This analysis of technology use has shed some light on the ways in which different kinds of devices (and services) are used by working parents in both the home and

work spheres. Before we look more closely at what it has told us, let us first look at another of the questionnaire items asking specifically about working parents' attitudes to technology use for home and work. One of the items asked which of the following statements they agreed with most:

1. I like to keep the objects and technologies I use for home and for work completely separate if I can.
2. I prefer to keep the objects and technologies I use for home and for work mostly separate, but like to be able to mix their use for home and work purposes if it is necessary.
3. I like the flexibility of being able to use the same objects and technologies for home and for work purposes whenever I want.

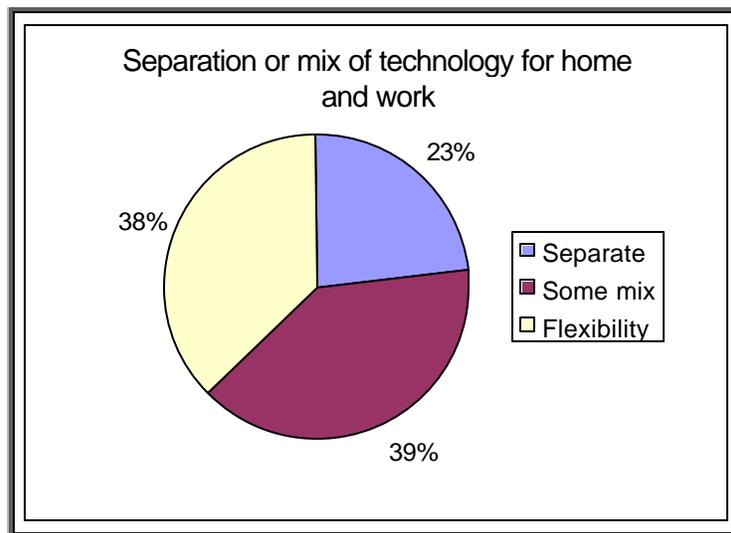


Figure 23. Proportion of questionnaire respondents who indicated they preferred to keep home and work technology separate, mix to some degree, or use flexibly for home and work.

Figure 23 shows that relatively few of the participants, under one-quarter, said they preferred to keep their use of technology completely separate between the workplace and home. The remainder were split fairly equally between the options of complete flexibility, suggesting a total crossover between home and work, and the ability to mix their use of devices and artefacts when necessary but as a general rule, separate. There were no gender differences here, nor were there differences between those respondents who conducted their work more at the organisation versus more in the home.

These results, which reflect people's preferences, are especially interesting when we look at the overall actual usage patterns for different technologies. Here, despite the fact that the majority of working parents say they like some or total flexibility to use the same technologies for work and home, we find that most technology is used in a segmented way. In other words, when we look at the use of different devices, artefacts and services, we can see that most of the technologies we asked about are

used mainly as work only devices, home only devices, or in a segmented way for work and home. Specifically:

- *Work Devices.* With regard to work-related devices, the fax machine, electronic diary on a PC, and whiteboard stood out as the most frequently reported devices for use only in a work environment (reported as work only devices in at least 76% of cases).
- *Home Devices.* With regard to devices that were used mainly for home reasons only, the two devices were the videocamera with 91% reporting home use only, and the conventional camera (89%).

In terms of use for *both* home and work, there were four devices or services which stood out as being used mainly for both purposes (indicated as such by at least 80% of respondents). However, in these cases these working parents indicated that they almost always did so in a segmented way. In other words, they tended to maintain and use *separate* devices or accounts for home and work use (see Table 2).

Table 2. Devices or services most frequently used for work and home showing proportion used as separate devices for work and home.

Device or Service	Proportion Use for Both Work and Home (%)	Proportion Use in a Segmented Way (%)
Landline phone	90	85
Desktop computer	80	75
Printer	80	73
Email	84	76
The Web	81	71

One might argue with regard to the landline phone, desktop computer, and the printer that these are designed to fixed (i.e., non-mobile) devices and therefore we would expect that there would be separate dedicated devices used both in home and work environments. However, the question asked was about use for home or work *purposes*, and thus home-work crossover use could occur despite the location of the device.

Nonetheless, there are probably many reasons why this does not seem to occur. Some are likely to do with organisational restrictions on use. Indeed, this must be a main reason why we also see segmented use of email and the Web, both of which transcend the constraints of location. Other reasons may well have to do with the usefulness of a device in the setting to which it is relevant. In the home setting, one is likely to be involved in home activities, and likewise, be involved in work activities in the work environment. One is therefore mentally in the mindset for home or work when in those locations, is reminded of the need to use these devices, and is with the people and resources to hand to help accomplish them.

It is interesting to look, therefore, at the *mobile* devices for which the data indicate substantial work and home use. There are four such devices which are both mobile, and which were used for home and work purposes a substantial amount of the time (more than 50%): the palmtop computer, the laptop computer, the mobile phone and

the paper diary. We can now look at whether any of these are truly “crossover devices” in the sense that they tend to be used in an integrated way, blurring the boundaries between work and home activities.

- In the case of the laptop and palmtop computers, it is difficult to draw firm conclusions, as both of these devices were the least used of all devices, services or objects (with only 25 and 14 of 64 potential users, respectively). However, for the laptop, in almost half of the cases, it was used as a work only device. For about a third of users it was used in an integrated way for work and home. In the case of the palmtop, this was used as an integrated device 43% of the time, but because of the small sample size, it is unwise to infer too much from this.
- The mobile phone was mainly used as an integrated device for home and work (45% of cases), but was also often used as a home only device (32% of cases). This is especially interesting considering there are very likely to be organisational restrictions on the use of work-owned mobile phones. It does seem, then, that there is definitely a push to use the mobile phone in an integrated way even if workplace policies attempt to restrict this. As we will see in Section 10, one of the strengths of the mobile phone for working families is its use for intra-household communication.
- Finally, with regard to the paper diary, no clear-cut pattern emerges. It was about as likely to be used only for work or only for home as for both home and work. In the case of dual use, people were as likely to have two separate ones for home and work as to use the same one in an integrated way. This is interesting also in light of the fact that presumably organisational policies and restrictions would have no impact on the use of paper diaries. As we will see in Section 11, the use of a paper diary needs to be understood in light of its relationship to the many other artefacts that working families use for home and work planning and reminding.

All this suggests that there is little strong evidence for any integrated home-work technologies in the lives of working parents, the mobile phone being a possible exception. This is despite the fact that most working parents seem to indicate that this is what they would like.

The Desire for Integrated Technologies

Indeed, when we look at some of the evidence from the interviews, we can see that working parents voiced some of their desires for technologies to be more integrated for home and work. One woman, when talking about her activities on the previous day, described how she had to take both her home and work laptops to work because she needed to send an email from her work laptop referring to some Web sites bookmarked on her home laptop, and using an email address stored on her home laptop.

Another working parent (this time a man) complained more generally about the problem of too many distinct computers, all with different files and resources:

“The problem at the moment is [our computers] are separated. My wife’s got a laptop she uses for work, we have a Mac at home for personal use and my accounts, and my PC at work, so you’ve got various things which are duplicated on all three and whilst work stuff has to be kept separate from other stuff, it would be much nicer if you could have separate things on the same box rather than separate boxes so although its an work-owned PC if it could be linked up to my home stuff it would make life a lot easier....” M7

Moving on from computers, there were also problems mentioned with too many distinct communication devices and services in the lives of these working parents. For example, one working mother complained that there were too many places to check for messages in her daily life. She said she spent too much time checking email messages, the answer phone messages, and voicemail on both her business phone and personal phone at home. As she complained “it’s like four things to check all the time”. As we will see later in our discussion of people’s ideal technologies, it is therefore not surprising that the desire for more integrated technologies is a theme that emerges.

The Problems of Integration

Having said all of this, there are different kinds of problems associated with using the same technology for both home and work. Because the mobile phone (and to some extent the paper diary) is the technology most used in an integrated way, it is with respect to its use that we most see these problems.

One set of problems has to do with the receiving of calls in inappropriate situations. Consider this quotation from a working mother who just went back to work after having a baby:

“I hated the mobile phone at first because people could just contact me, I found it all a bit stressful at first, because I’d be in Boots buying nappies and someone would be like...we’ve got a new project...and I just thought this is ridiculous, but then I used to relax and let it take messages because I used to react to it so quickly because it was so new, I’ve learnt to let it take messages and react to them later” F4

This quotation also illustrates the fact that these mobile phone users developed their own strategies to deal with the problems of the intrusion of activities from one sphere of activity into another. This is how another working mother dealt with the problem of filtering out unwanted calls in certain contexts:

“from a practical point of view, my mobile phone has got to be the most useful technology, but I don’t tend to give the number out so that it can stay switched on if I’m in a meeting, because of the need for contact with the nursery. So it’s one that I can keep switched on because it’s unlikely that it will ring ... I’ve tailored it so that only they will be able to get through” F6

Further, she said:

“it would be nice if you could get incoming calls barred apart from one number coming in which you would be willing to accept an emergency call from. That would mean I only have to have one mobile because I could just bar all calls except for the nursery.” F6

Therefore controlling who has access to one's mobile phone numbers is a way of filtering out and controlling crossover effects. While the desire to have integrated technologies is clearly present for working parents, it is also clear that most of the key technologies working parents depend on are not designed to supply the flexibility or control that they need to effectively manage the boundaries between home and work.

9. Use of Technology While Mobile

The preceding set of findings gives us some understanding of the extent to which the men and women in our study used different kinds of technologies and tools to help them in work and home-related activities, and also shows the extent to which they tended to segment their use of technology for work and home. Clear patterns of segmented use were found for fixed, situated devices such as desktop PCs and printers, perhaps not surprisingly, although technologies and services not bound to physical places were also used in segmented ways. As we have seen, segmentation sometimes created problems for working parents, and they expressed a desire for more integrated use of technology across the home-work boundary.

We are particularly interested in the use of technology while mobile because as we have seen, these working parents were highly mobile during the course of their working days, both in accomplishing activities for the family, in the service of work, and in commuting between work and home. We have so far had some discussion of the kinds of mobile technologies that they reported using, and found in particular that two of these mobile technologies were also the most likely to be used in an integrated way: the mobile phone, and to some extent, the paper diary. However, as research is beginning to show, not all mobile technologies are in fact used in mobile ways. For example, the mobile phone is as often used in the home as it is used on the move (UMTS Forum, 2003). There is also research to show that the same can be said of the use of the laptop in work settings (Beech & Geelhoed, 2002).

It is useful at this point, therefore, to look at that section of the questionnaire that asked working parents specifically about the kinds of technologies and artefacts they took with them in different kinds of mobile situations. Here we distinguished between commuting between work and home (or home and work), travelling locally for the purpose of work, travelling long distances for the purpose of work, and making short journeys for domestic reasons (see Figure 24).

The findings were as follows:

- **Commuting.** As shown by the graph, the mobile phone was by far the most popular device for our working parents to take with them while commuting between home and work with the diary in second place with approximately half the number of votes. The high percentage of participants that reported carrying their mobile phones for commuting becomes even more significant given the fact that not all working parents commuted into work and not all owned a mobile phone. The next most popular devices were the paper address

book, paper list and palm top. Note that all of the people who reported owning a palm top (14 in all) reported carrying it while commuting.

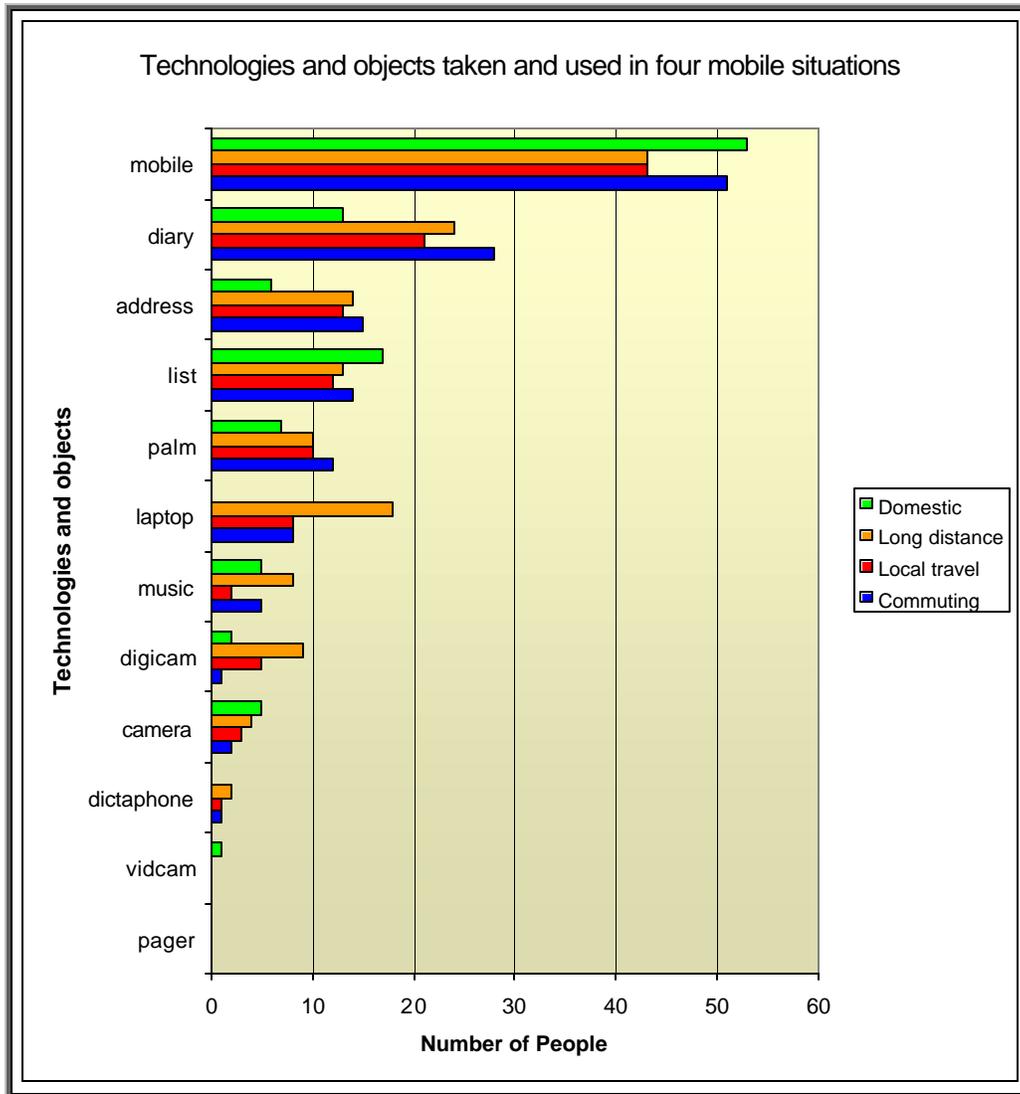


Figure 24. The proportion of questionnaire respondents who report using different technologies and artefacts in four different mobile contexts.

- Travelling locally for the purpose of work.*** Again the mobile phone proved to be the most popular of the mobile devices for work travel locally with two-thirds of the total sample claiming to carry them in these circumstances. The diary was once more the second most popular with other organisational and reminding devices close behind, as with commuting. The use of recording devices such as cameras and dictaphones was limited, however more people reported taking a digital camera with them compared to commuting.

- ***Long distance travelling for the purpose of work.*** The responses for the use of mobile devices when completing long distance travel for work purposes follows a similar pattern to the previous two situations with mobile phones being again the predominant device followed by the paper diary. The major difference was with regard to the use of laptops -- double the number of users carried them in this situation versus the previous two situations. Reasons behind this may be explained by the nature of long distance travel which generally implies something that is reasonably important, perhaps a conference, presentation or meeting, where the laptop serves as a tool to support this kind of work as well as supporting communication from a remote location. The remaining reminding and organising devices came next in frequency of use, with similar figures to the previous mobile situations. Recording devices and music systems were additionally used more frequently in this situation, especially the digital camera.
- ***Domestic purposes.*** When travelling for domestic purposes the mobile phone was again the most popular mobile device, used by three times the number of working parents than the next item. Second most frequent was the paper list, presumably consisting both of shopping lists and ToDo lists for the home. The paper diary also featured quite frequently. A limited number of participants reported taking a range of other tools on these occasions including the remaining organising devices, music and cameras, and including, for the first time, the video camera. The dictaphone and laptop, definitely identified here as work as opposed to home tools, were never taken by our sample for domestic purposes.

These questionnaire findings therefore confirm that the mobile phone does appear to be the key technology working parents take with them when mobile, whether this mobility is for domestic reasons, for work-related reasons, or from transitioning between work and home. Paper artefacts, particularly the paper diary, also featured in these mobile contexts, though not as frequently. As one of the women interviewed put it, “Wherever I go my mobile and my personal diary are with me”. Finally, the palmtop computer was carried everywhere for the few people who owned one, and the laptop was only carried for work purposes, especially for long distance work-related travel.

It is interesting that we come back to the mobile phone and the paper diary as key technologies for working parents both as a result of this analysis, as well as a result of the more general analysis on technology use. Here we see that these are two important technologies for different mobile contexts. Previously we saw that both technologies were, to some extent, used as crossover technologies in home and work situations. With this in mind, the next two sections of the Findings will examine more deeply the topic of communication and how specifically the mobile phone supports it, and reminding and planning behaviours in the home and work spheres.

10. Use of Technology for Communication

In this section, we look more closely at patterns of communication within the working and domestic lives of the working parents we studied. We saw in Section 8 that communication technologies were central to most working parents lives: they all owned and used a diverse set of tools for communicating: fixed line phones, mobile phones, voicemail, answer machines and email. In fact, when asked in the interviews about the most important technology in their lives, the technologies most frequently mentioned were communication technologies. Most commonly mentioned was the mobile phone, with email being second and the PC third. In the case of the PC, the fact that this gave them access to email and the Internet were often the main reasons why it was deemed so important.

It is useful then to look at why communication technologies are so important in the lives of working parents. We will focus in particular on the role of domestic communication and how the mobile phone supports it, not only because this was mentioned by the working parents themselves as important, but also because it emerges as a distinguishing feature of the use of communication technologies by working parents' households.

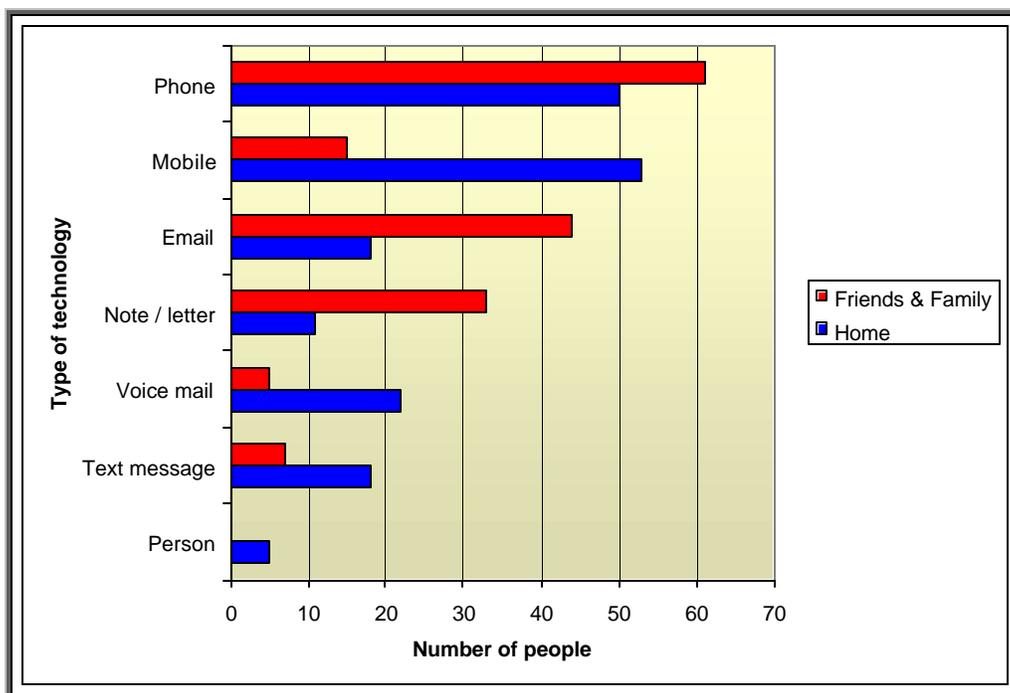


Figure 25. The proportion of questionnaire respondents who report using different technologies and artefacts in four different mobile contexts.

First, we consider some of the questionnaire data with respect to the role of different communication technologies for the purpose of two kinds of domestic communication: contacting other members of the family during a typical day, and keeping in touch with more distant friends and family. Questionnaire respondents were given a list of different methods of communication and asked to choose the three most important ways they used for household communication, and for keeping in touch with friends and family not members of the household.

Figure 25 shows that for communicating with other members of the household, both fixed line and mobile telephones were about equally the most important (with mobile phones slightly more popular than fixed line telephones). Voice mail or leaving an answer phone message were used next most frequently, with some use also of text messages and email.

Getting in touch with friends and family who are not members of the household showed a different pattern of results however. Here the fixed line phone, email and even written letters or notes proved more popular than the mobile phone, which was mentioned by only about a quarter of the sample.

What is interesting here is that, while the fixed line phone was important for both kinds of domestic communication, the mobile phone was just as important when it came to contacting members of the immediate family. By contrast, email was the second most important technology for contacting friends and family outside the household, but did not play a major role in communicating within the household.

To understand why this is, we need to look more closely at the role of these different technologies. One way we can do this is to look at the types of communication activities that took place on the mapped days. This in a sense provides a snapshot by which we can understand how these technologies are used.

10.1 A Snapshot of Mobile Phone Use

The first point to note is that for the 26 people interviewed who used mobile phones (seventeen women and nine men – two men did not own them), fifteen kept their mobile phones switched on all day, eight switched them off only at work, and three people kept them switched off, keeping it for emergency outgoing calls only. As we saw earlier, keeping the mobile phone switched on at work was often for the purpose of receiving home-related calls from other members of the household, or from nurseries, schools or childminders. The people who switched them off often had to do so because their workplace did not sanction having them left on.

Second, of this sample, thirteen people used one mobile phone both for personal and work use, three of participants had two separate mobile phones for both work and home, nine used their phone for home use only and one just for work use. This reflects the trend from the larger questionnaire sample, showing the predominance of the mobile phone for home use (whether combined with a phone used for work purposes or not).

Whilst mobile in their car, on the Mapped Days, three participants made mobile phone calls for the purpose of work and three received work related calls. The purpose of these calls was not discussed in much detail but we know that one of the calls received were from a client who wanted some support in solving a problem, one was to discuss preparation for a meeting, and one was from a colleague who had a query.

While mobile, six participants (all women) initiated home-related calls on the day in question. One woman reminded her son to check he'd turned off the TV and lights and had locked the front door upon leaving the house, another called her husband to do some family scheduling, one participant reminded her partner to be home early in time to let the children into the house, three female participants rang their husbands to let them know where they were on their way home from work, and the last woman rang her husband to ask him to collect her from their daughter's school because it was raining.

While mobile, four people interviewed received home-related calls on the mapped day. Three women received calls: one from her husband to let her know he'd just left work, another women received a call from her husband asking her if he wanted her to cook supper and another women received a call from her son asking if he was allowed to cook his own tea. One of the working father's we interviewed received a call from his father-in-law for a general chat.

Interestingly, three participants (one female, two male) also received text messages while mobile: two from family members – one man received one from his daughter, another man received one from a friend and a woman received a message from her bank which informed her a cheque had cleared. No participants reported sending any text messages, the general consensus amongst participants was they either didn't know how to do this, or if they did, they were far too slow at typing in the message finding it far too time consuming and cumbersome, viewing it as an additional thing that they would have to learn to do which they didn't have time for.

10.2 The Mobile as Household Communication Tool

While it is difficult to draw any firm conclusions on the basis of this limited set of data, the picture that begins to emerge is one in which the mobile phone plays an important role in both the work and home spheres. Some of the working parents we interviewed indeed stressed that the mobile phone was one of the most important technologies they used because it effectively crossed the work-home boundaries so well:

“certainly the mobile [is my most important technology] because of the way I run my life, work and home is blurred and the mobile is relevant to everything, and because I have all my important numbers typed in there, if it's a client that's phoning me I know to sort of go: hello [full name] or 'hi' depending on who's phoning, so it really is good from that point of view” F4

Others mentioned some of the ways in which the mobile phone had changed their working lives. For example, one of the men in our interview sample was a general practitioner (GP):

“probably the mobile phone has had the greatest impact on GP availability, particularly for on-call work messages which can come straight to the person without having to call into base each time.” M3

However, most of the comments in the interviews underline the fact that the mobile phone’s greatest strength was as a household communication tool, and one in which women acted essentially as the hub of the communication network. Our snapshot shows that women were more likely to initiate such calls often in order to plan or issue instructions. If women received calls, other family members were in a sense “checking in” and asking for instructions. The interviews support this view. Here they show that the mobile phone was mentioned particularly by women as vital in supporting their role within the family. There were different ways in which this occurred:

One important way was allowing working mothers to be always available to the family, or virtually connected to them, in case they are needed for anything:

“I take it everywhere I need, so everyone who needs to get in contact with me can.” F1

“I keep it on all the time so I am always in touch.” M6

“We’ve found the mobile useful to be able to keep tabs on each other, particularly now the children are getting a bit older and want to go out, at least we can stay in contact”. M8

In addition, they reported wanting to have the mobile in case emergency situations arose.:

“if anything ever happens with my son I know the nursery can always contact me, likewise if anything ever happens in the car I’ve got something there, so that’s always important for me”. F6

“I always have the phone on, I always put it on silent because if anything ever happens with [my son]... then it’s ok to contact me at work, but because obviously being on the phone all the time, if there’s ever a problem, it can either be text or if I miss a call then I can pick it up, I always leave it on just in case” F1

Another reason was to be able to keep track of the rest of the family for peace of mind and to know they are safe:

“The only reason I have one is for the children really. It’s handy if [my daughter] goes to the mall or somewhere, and I can get hold of her whenever I want to. She’s got one and [my son’s] got one. So if they go off, it just keeps you in touch. They’re fantastic for that. She goes on buses to the mall, and you sometimes think “well I wonder if she’s got on the bus?” so at least you can phone her and she can say where she is. So that’s quite good.” F17

Being able to contact the rest of the family was also valuable in order to help coordinate and schedule events. Importantly, this includes monitoring family members to check that what should be happening is happening, delegating tasks to family members when necessary, and also reminding family members:

“I did buy the phone for work really rather than as a social thing, I suppose actually it’s quite handy to use if your darting, [my husband] and I might use it just to coordinate who’s picking up the children, what we’re having for dinner, but I’m not one of these people who’s constantly phoning for no reason.” F4

“...normally I give the children a quick buzz to let them know their tea is ready because they’ve got mobile phones as well...”. F13

“[My daughter] usually texts me, so when I turn it on at 4.15, it’ll say ‘hi mum, how are you, can you pick up some cat food on the way home or something like that, so that’s a good way of doing it. I think they’re great for that sort of purpose.” F17

Finally, part of the value of the mobile phone was to be able to contact other members of the family to re-plan when necessary due to changing circumstances and unexpected problems:

“My mobile, I don’t use very often but I’m lost without it, just for the purpose of if the car breaks down or if I have to go and pick [my son] up from school and I’m stuck in traffic or anything like that happens. I tend to get very uptight if I haven’t got it on me and if I’m popping to the shop I’ll take it just in case something happens on the way.” F10

The role of the mobile phone was not only used in this way while mobile but also, was often used in this way in the workplace. For those women who kept their mobile phones on, this provided a channel through which calls from the family could be received.

Although most of the comments regarding use of the mobile phone as a household communication tool came from the women, men as well as women did this, although as we have already pointed out, this was mainly as the receiver of such calls, not as the initiator:

“My wife will phone during the day occasionally – if we need something can I pick it up on the way home? or if there are any changes to the plans we had, or whatever, for the day. She will always use my mobile.” M8

In addition, some of them expressed reluctance both at having to own a phone and also in having to leave it on at work:

“I wouldn’t have one at all but my wife likes to be able to contact me.” M4

Indeed, one of the two men who did not own a mobile phone at the time we interviewed him said he was under considerable pressure from his wife to get one, and would probably soon have to “give in”.

Finally, with regard to household communication via the mobile phone, another characteristic that emerged was the extent to which such calls were often described as very brief or even entirely content-free. For example, one woman said she often called her husband and didn’t leave a message because her number would register on his phone and he would generally know what it was about. For example, she would routinely call to say she was about to leave work. This shows that the nature of these kinds of intra-household calls were highly contextualised in the sense that members of a household shared an intimate knowledge of each other’s habits, routines, and

information relevant to the doings of the others. This means that messages between family members could be, and often were, almost content-free. This is an issue which potentially has some interesting design implications for new technologies and deserves more in-depth exploration.

10.3 Use of Other Communication Technologies

While we have focussed mainly on the mobile phone in the discussion so far, looking at the Day Maps and interviews also shows similar patterns of household communication accomplished through other kinds of communication technologies, most especially the fixed line phone, but also voicemail (or answer phone) facilities, and, in a couple of cases, instant messaging (IM).

With regard to the fixed line telephone, while heavily used at work for work purposes, and even sometimes for work purposes at home, home related calls described by the interview study participants fell mainly into the categories of use we have already outlined for the mobile phone. Namely, these calls, whether initiated or received, and whether made at work or at home, were mainly about household “micro-management”: monitoring family members’ activities, planning and scheduling for the family, and delegating tasks to members of the household. Again, it was the women mainly involved in these kinds of communication activities in the role of manager. In addition, there were also instances where women took care of other kinds of household administration, such as paying bills, and contacting childcare facilities. These kinds of calls often happened from work, but also sometimes from home. In addition, fixed line telephones in the home environment also were used for general chats with friends and family.

While we did not look in-depth at the use of email and the Web at home, both were discussed to some extent by the interview participants. Four participants (three females and one male) checked their personal email in the evening at home. One self-employed female participant reported always checking her work email before she went to bed each evening. This enabled forward planning for the next day, which freed up time the next morning for home-related domestic chores such as taking her daughter to school and going through some domestic bills and post.

Four participants, all female, browsed the Web in the evening at home for personal reasons, two participants for specific purposes: one to look for duvet covers she wanted to research before she went shopping and one participant browsed the Web for a festival venue and to enter a chat room related to this. In addition, one female participant shopped on line at E-Bay with her husband for a gift for their daughter. Only one participant (again female) reported using the PC to play computer games for an hour after she got home from work. More extensive research on the use of the PC in the home environment can be found in work by Frohlich et al. (2000) as well as a large body of work on the use of email, though mainly for work purposes (e.g., Whittaker & Sidner, 1996).

11. Use of Technology for Reminding and Planning

The emergence of the paper diary as a key mobile “technology” points to a much more general area of importance for working parents that has to do with the use of a range of different kinds of artefacts (both digital and paper) for the planning, reminding and coordination of activities in the home and work spheres. In this, as we have seen, communication technologies such as the mobile phone and fixed line phone play important roles. In this section, however, we look more closely at the whole area of time management, planning and reminding that, as it turns out, reflects complex systems of artefacts used for both work and home. As we will see, this area – the job of managing work and family, and of drawing on many different artefacts and strategies to do so, is a defining feature of the lives of working parents. Consider what this working mother says about the complexity of managing all the activities in her life, and the lives of the people in her family, and the struggle she expresses about trying to do this well:

“It’s hard, and it’s hard to delegate really... I find it hard because I’m the one with the diary and I’m the one who holds everything together. Those bits of paper there are all to do with school. So I’ll go through all those and think ‘that needs signing; they need to go.’ I use things like that tax thing there. That’s for [my daughter] and she’s got to fill that in. I use those clip things a lot to remind me. I can’t bear that being there, so I’ll get her to do that to get it out of the way. I’m quite an organised person really. And we’ve got bills on the desk [in the next room, next to the kitchen] in folders and things, which twice a week I’ll go through. And there’s a shopping list there. I used to get the children to do a menu on a Sunday, which was quite good. It sat there and then instead of bugging me they could come and see what they’ve got to eat. We haven’t done that for a while actually. Also I feed the old lady down the road at 7 o’clock (we all take it in turns in this road to cook for her instead of meals on wheels) and I’m always really aware of forgetting about her, so there’s usually a PostIt on there to say ‘don’t forget Miss A---!’ But I haven’t got around to doing that yet!” F17

11.1 General Trends

To get a broad overview of the kinds of tools working parents use to support planning and reminding, we turn first to the questionnaire results. Respondents were presented with a list of eleven items and were asked to select up to three of them that they most heavily relied on for supporting planning and reminding. The eleven items listed were: paper diary, electronic diary on a desktop computer (such as Outlook), electronic diary on a laptop computer, electronic organiser (palmtop computer), paper wall calendar, paper lists, PostIt notes, bulletin board (or whiteboard or pinboard), putting things in particular places, and sending yourself messages via email, voicemail, or text messages (“selfmail”). There were separate questions for household activities and work activities. The results are shown in Figure 26.

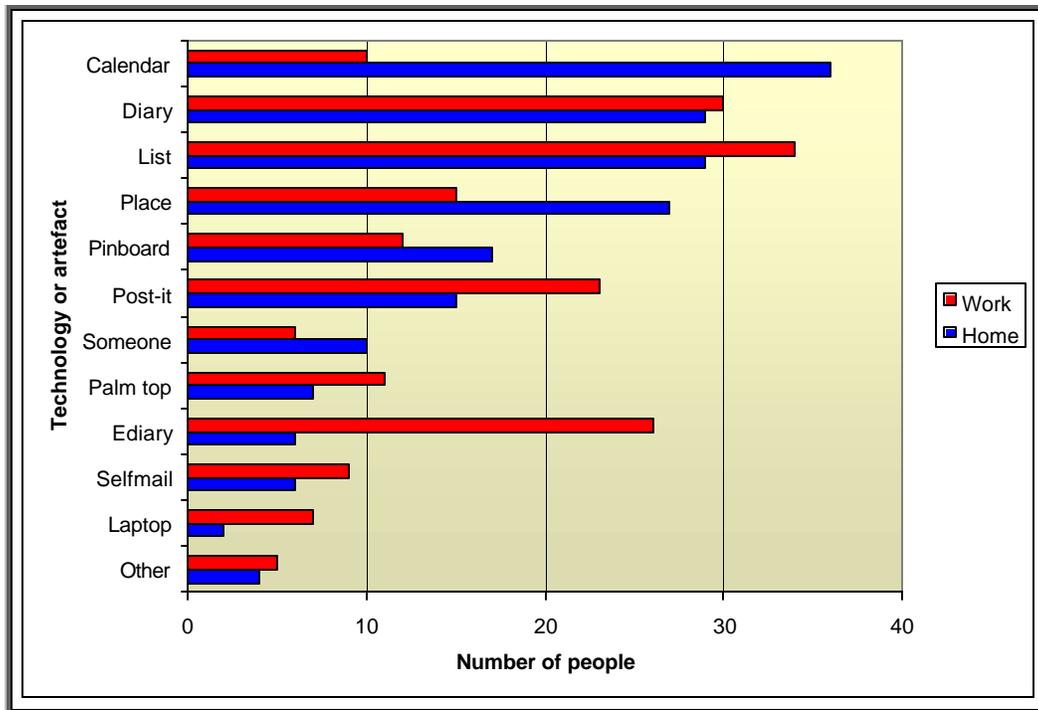


Figure 26. The most frequently used technologies or artefacts to support planning and reminding for both household (blue) and work activities (red).

With regard to household planning and reminding, the wall calendar emerged as the most frequently used item. Paper diaries, paper lists and putting items in particular places in order to not forget them were also frequently selected. Other physical devices such as pinboards and PostIt notes were more frequently indicated than any of the electronic devices respondents were asked to choose from.

The pattern of tools used for work-based reminding and planning was different. Here, although the top two responses were still paper-based artefacts (namely paper lists and the paper diary), the electronic diary on the desktop computer was the third most popular tool. Another difference can be seen with regard to the use of wall-mounted tools such as pinboards and wall calendars. While these artefacts were popular for home use, this was not so in the workplace environment. It is especially interesting here to see how important the wall calendar is in the home environment, but not at work.

Participants were additionally given the opportunity to add any methods of their own, not listed within the questionnaire (shown as 'Other' in Figure 26). In the home, other methods included relying on their own memories and the electronic diary on their mobile phone. Many other techniques were used in the workplace, mainly digital in nature: using reminders in in-house office databases, leaving email messages in their electronic in-tray boxes or creating electronic post-it notes for ToDo activities.

In another question, respondents were asked when they were most likely to plan their To-Do list for the day ahead (both work and home activities). Again, respondents

could indicate up to three items from the list. The responses and items are shown in Figure 27.

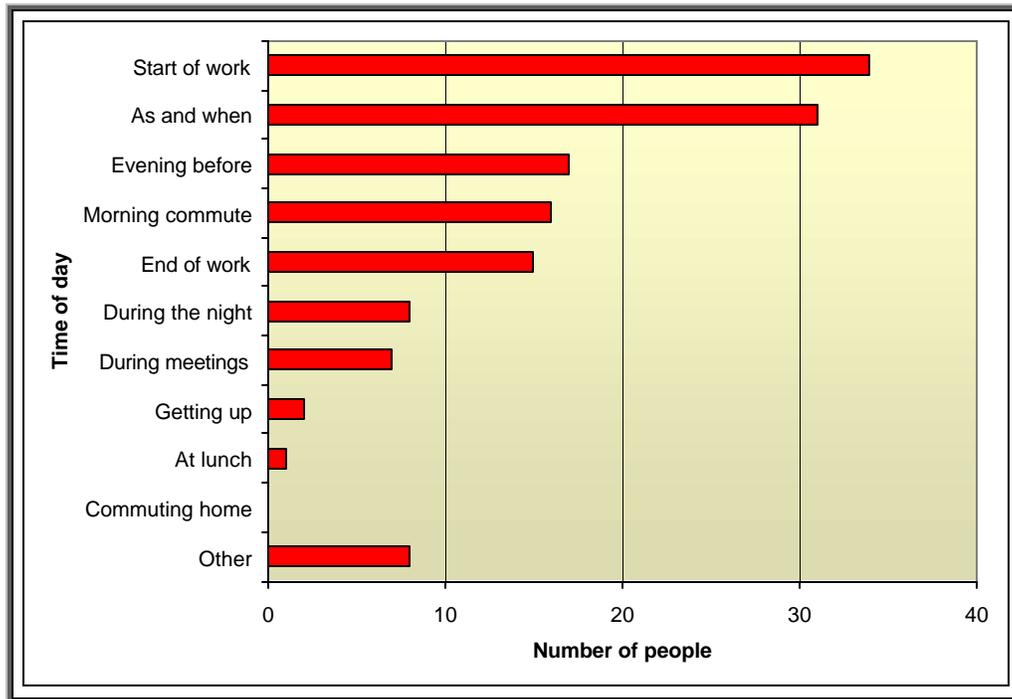


Figure 27. When during the day respondents were most likely to plan their ToDo list for work and home activities.

The answers here show that such planning activities were most likely to occur either at the start of the working day, or on a much more ad hoc basis -- as and when thoughts relating to plans occurred. Other popular times included the evening before, at the end of work for the next day, and during the morning commute. Probably such times include a mix of occasions during which planning is deliberately done (such as in the morning or when winding up work before leaving), and occasions when planning occurs spontaneously. It is also interesting to note that planning is reported to occur more frequently on the commute to work, than coming home from work. Other research has shown (Sellen et al., 1997) that people are most likely to remember their intentions when they are physically transitioning from one location to another. It appears that for these working parents, while this clearly does happen, there are other factors at play. For example, the fact that no participants claimed to do their planning during their commute on the way home, and only a small percentage reported planning during the lunch hour or when getting up in the mornings may indicate that during these time slots, people are otherwise busy, or are orienting themselves toward other things.

Under the "Other" category, additional times that working parents gave for planning included during the weekends for the week ahead and at the start of month for the month ahead. Work planning could also take place at the start of a project, planning their schedule towards a deadline, at the time of receiving an action email or

telephone call and letting activities at work drive their work agenda. A couple of participants also reported creating their ToDo lists in the mornings during breakfast.

The next question of relevance was a rating scale for which each respondent was asked who in their household did more of the family management (the female or the male). Results are shown in Figure 28.

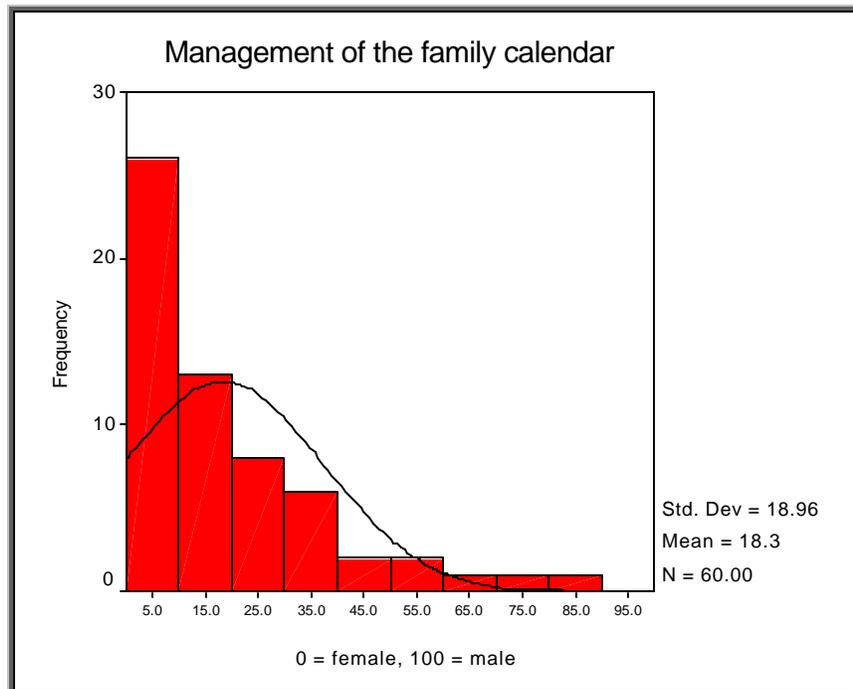


Figure 28. Who in the household does more of the family management?

The results here are very strongly skewed toward the women. Further analysis of the data further shows that 83% of the families report being run exclusively by women, and only 2% of families reported having the men as managing the family affairs. As we shall soon see, these findings are supported and elaborated on by the interview data. Indeed, we have already seen in the sections on Home-Work Crossover and Stresses & Strains that it is the women who tend to manage household affairs, and that this role results in other patterns of behaviour at home and at work that are different from men.

Finally, we asked the questionnaire respondents, how many diaries or calendars their household used in total (including paper and electronic ones, for both home and work purposes). The results are shown in Figure 29.

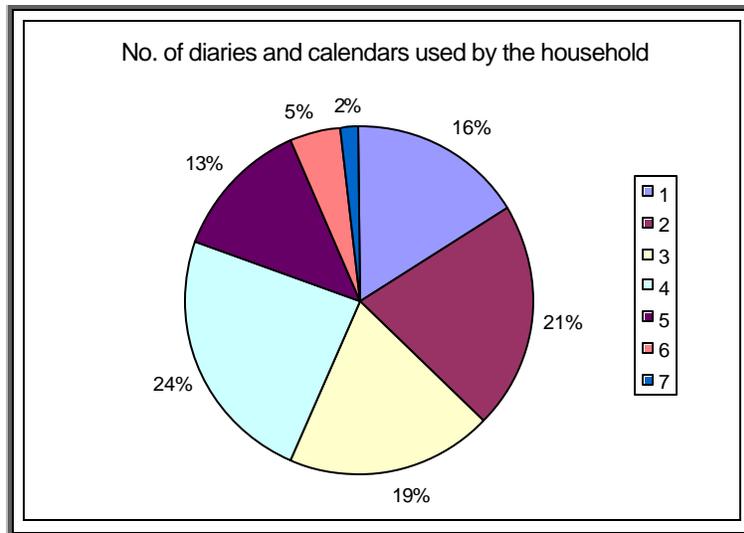


Figure 29. The total number of diaries and calendars (paper and electronic, for both home and work) used by each respondent’s household.

The results show that it is the norm to use multiple diaries and calendars within the household. We found an average of 3.2 diaries per household, with 44% using between four and seven different artefacts. How and why this is the case is elaborated on in the next section.

11.2 Planning and Reminding at Home

Turning now to the interview and Day Map data, we can shed more light on just how different artefacts and strategies are used for reminding and planning for home activities and for work activities, and the extent to which these may or may not be merged. These data are also useful in giving us more insight into how strategies and artefacts might be used differently by men and women. It also allows us to cover details of how artefacts are configured or arranged for use in different environments, as well as any problems encountered or possible improvements with the way that things are currently done.

There are several key artefacts and strategies we see at work in the homes of working parents. It is useful to distinguish between women and men when discussing these, as their use of artefacts and strategies are very different. Almost without exception, it is the women who take control of the family management, including managing and updating any communal artefacts or things made available to the whole family. It is also they who do the reminding and monitoring of other family members (husbands and children alike) and who feel the most stress as a result of all of this. The women are almost entirely dependent on paper-based artefacts and strategic use of location for the placement of physical reminders, while men tend to be more likely to use electronic, work-related devices to tie in with any reminding of key home events.

Men

It was clear from the interviews with the men that most of them relinquished control of the family calendar to their wives, as the following quotations show:

“My wife is a super scheduler, she’s unbelievable, she has so many clients as well, she has so many different things on the go all at once, she has to deal with the kids, cook all the meals.” M10

“...but by and large my wife has the bulk of the domestic things, she really does, but I make up for it in work, you know sometimes 12hours a day.” M10

“I’ll have to get in touch and say ‘am I free at such and such’ and she’s my social secretary you see so I haven’t a clue what’s going on, even though there’s a calendar!” M5

As one might therefore expect, the men did not tend to have any elaborate use of artefacts to help them with home activity planning, or any separate artefact for reminding and planning of home events. One man who was an exception to this had a separate paper diary purely for home events. However, four of the eleven men interviewed did use some of their work-related artefacts to enter in some significant home events. This sometimes included electronic tools: two men programmed in home events into their Outlook calendars, and one used a mobile phone to remind him of birthdays and other important time related events. Another put some home events in his work-related paper diary.

With regard to electronic portable diary devices, two of the men had bought palmtop computers in an attempt to better merge home and work diaries, but one had it stolen and the other gave up using his HP Jornada because he said it was too big and bulky to carry around. It was also evident in interviewing the women that some of their husbands used palmtops.

In addition, a couple of men put things habitually by the front door so they would remember things for work. Additionally, four of them mentioned checking or noticing PostIt notes and calendar events in the home, but in all cases, they were the receivers of the information, not the ones who generated it in the first place.

Women

By contrast with the men, what we see for the women is a complex array of artefacts, mainly paper-based, used to plan and manage home events.

For the women, one of the two most important artefacts for managing home events was the paper diary or filofax. For about half of the seventeen women interviewed this was almost always merged with work events and was very much seen as the one place where they could see everything that was happening. All the rest of the women, bar one who used a handheld electronic diary, carried a paper diary with them for home events, but kept this separate from their work artefacts. What we can see in all cases is that portability was critical because events needed to be added as and when the need occurred, and this could be at many different times throughout the day, at home or at work.

The second crucial artefact was the wall calendar. As one man said about his wife's wall calendar "it's like her bible, it has everything on there, all the school stuff, everything the kids have to do-- everything". The wall calendars in the families we studied almost always showed a month at a time, and were used to show what different family members were doing on a particular day. This included special events such as birthdays, along with more regular or periodic events such as the husband's shift work, late meetings, travel, holidays, and so on. This was most often kept in the kitchen, but in one case it was kept on the back of the door in the toilet. The important issue here was that these could be placed somewhere where all family members would have access to them and would notice them. In some households, there was a routine of children (mainly) checking it in the morning to see what was happening that day. Although accessible to all, however, the wall calendars were almost always maintained and updated by the wife. These excerpts sum up how it can be used:

"We have a calendar in the toilet. Its just a handy place so whenever anyone goes to the loo they can check the calendar, it's a wipe clean one so if anything ever changes then they wipe it off and it's got four sections: one for my husband, one for me and one for each of the children, so we all write in what we're going to be doing and where we're going to be on each day." F14

"There will be some days when it's completely blank and that's just a normal day, but if there's anything different happening like if one of the children's on a school trip or something, then that will be written in there or if they need anything different, my husband works shifts so his shifts are always all written on there, exactly what he's doing, so that children know when he's going to be in the house and whether they need their keys to get in the house or whether he's going to be at home when they come home, so I check that every morning to check nothing unusual is happening." F14

In addition to the wall calendar, there were other kinds of wall-mounted artefacts used. Bulletin boards were used to post bits of paper important for the family including such things as party invitations for the children. A whiteboard was mentioned as a place to keep a running shopping list, and a "prompt list" was mentioned by two women as something that each family member was required to check each morning so that they could see that they had everything they needed for the day:

"I've got a prompt list that's on the back of our front door and it's divided up into family columns, so basically it's everyone's responsibility to check their own list, so, for example, for mine it's: work pass, mobile phone, keys, cash and paper work whereas for the children, it's gym kit if required, sandwiches, glasses for my son, that sort of thing." F13

Some of the artefacts used were to create reminding artefacts more on-the-fly. This included both shopping lists, which were often compiled immediately before a shopping trip, and also ToDo lists which were often compiled at the beginning of the day. Additionally, they could be constructed both at home or at work for both shopping lists and ToDo lists. Such bits of paper had a limited lifespan, and were very much temporary artefacts:

"I have an ongoing ToDo list which is a scruffy scrap of paper and when the scruffy scrap of paper fills up then I transpose the things I haven't done yet onto a separate scruffy scrap of paper." F5

Finally, most of the women mentioned various ways in which they put things in key locations in order to draw attention to things that needed doing or taking on the particular day in question. Very common here was putting things in piles by the front door for either taking to work, or for the children to take to school. Paper was also often put in particular places to organise and draw attention to things that needed doing. Some of this was more ongoing, like the piles of post, or an intray for domestic “admin” and housekeeping. But PostIt notes also served as a way of supporting urgent or time critical reminders as well as intra-family communications. PostIt notes could be put on the back of the front door, on the kettle, on the mirror or in other critical places in the house. This would depend on whom the note was for, the location being chosen such that that person would be most likely to see it. Places often had a communally understood location. One woman always put PostIt notes for the family on a mirror that was seen as family members came through the front door. PostIt notes used for home purposes were also written and placed in the work place, such as around the computer screen so that tasks would not be forgotten. Sometimes these notes got carried home.

So, overall, we see that location, and the careful placement of objects is an important aspect of artefact use for timely reminders for home-related events. As one woman put it:

My memory seems to be failing me, and unless I do something so that it's visual, I won't remember to do them.” F11

11.3 Planning and Reminding at Work

Turning to management of work activities, we found that men tended to have much more complex use of reminding and planning artefacts than they did for home use. Women also showed complex use of artefacts for work activities, although not as complex as for they did for home. Both sexes made use of both paper and digital artefacts, and both sexes used more electronic devices at work than they did for home management. Differences between the sexes here had mainly to do with the merging of home and work activities, with fewer men allowing home-related planning to intrude on work-related planning.

Men

In terms of work, most of the men in this study used paper in conjunction with electronic diary systems. For example, one man used a desk diary to record time spent on projects, for looking forward at activities and for looking at the activities of team members. A small paper diary was taken with him to arrange meetings and to take with him when visiting clients, and a PC-based diary was used for scheduling group meetings. Dates from the small paper diary were transferred into the group diary. Dates from the large paper diary were sometimes transferred into the smaller one, as well as some from the PC diary. A ToDo list was also written out at the beginning of each day looking at all three diaries.

Six of the men used paper diaries (and some more than one paper diary) but in all cases, these were for work purposes almost exclusively. Some of these were quite small in size specifically for taking to meetings or for work travel. A couple in

additionally kept paper diaries that “lived” on the desk, and were for both sharing with others as well as keeping track of time spent on projects. Almost all of the men also used electronic diaries either on the desktop machine, on the laptop, or in palmtop form. Paper artefacts such as ToDo lists and also PostIt notes were used to draw attention to urgent tasks. Paper on the desktop was also used in conjunction with in-trays to keep track of tasks to be done, and tasks completed.

Women

What we see for the women is that all of them except for one used a paper diary. In half of the cases, the paper diary stayed at work and was not carried around. One feature of this kind of paper diary was that it was as important that it be used to record past events and time spent on projects, as it was used in a prospective way. For the other half of the women, the paper diary merged home and work events and was taken everywhere. For most women at work, paper diaries of both types were used in conjunction with a PC-based diary on their desktop (usually Outlook). The main reason for this was for sharing and scheduling with colleagues, as well as the use of electronic reminders to remind of upcoming meetings and appointments. Attitudes toward electronic diaries (both desktop and PC based) were not particularly positive, however. Rather there was a sense that they were compelled to use them, but would not give up their paper diaries in favour of purely relying on the electronic alternative:

“My observations of people using electronic ones are that it takes them five or ten times longer than it does for me to open the page and do it sitting there, which annoys me intensely. So I guess I haven’t seen a very good model of it working.” F9

In fact, only one of the women relied solely on digital diaries for work, using both a desktop diary and a handheld computer. One woman also used email systematically to send herself a message at the end of each working day to be opened at the beginning of the next day with a list of ToDo items.

In addition to this, the women used various other paper-based techniques for separating out urgent tasks or things that had to be done that day. This included both the use of PostIt notes (for example, stuck around the computer screen) as well as paper ToDo lists. These sometimes merged both home and work activities, sometimes being colour coded or otherwise arranged to demarcate home from work.

Interestingly, in contrast to the home, wall mounted artefacts were mentioned but only twice. Neither was similar to a home wall calendar. One was a wall planner for giving a longer-term view of work, and the other was a whiteboard indicating who’s in and who’s out of the office on a particular day.

Finally, many women mentioned the use of in-trays, piles of paper and arrangements on the desk as a way of keeping track and organising tasks. Paper was moved around the desk to signify tasks to be done, tasks in progress and tasks completed. In this way, location of physical items was used to support activity management in some ways similar to how it is done in the home.

11.4 Problems of Current Planning and Reminding Systems

Despite the obvious importance of planning, reminding and activity management in the lives of working parents, and the extent to which these activities relied on the support of tools and technologies, the interviews made clear the extent to which existing ways of doing this were usually less than ideal. Both men and women discussed various shortcomings and difficulties caused by the way they currently supported these kinds of activities, whatever the mix of physical and electronic tools they relied on. There were a number of key issues here, beginning with the need for different kinds of artefacts, the problems inherent in managing too many distinct artefacts, and the different features of work and home-based tools.

Different Tools for Different Purposes

The data showed that, for the support of planning and reminding activities both for home and work, different tools had different properties that in turn made them suited for some kinds of tasks and not others. It is perhaps no wonder then, given the sheer complexity of the lives of working parents, that there was such a diversity of tools that they relied on for the management of day-to-day activities. For example, this working mother described the five different artefacts her household used in everyday life:

“I have a Sasco wall planner, my paper diary, I use a calendar, I’ve got a personal diary, and a written one which is not for appointments but a retrospective one, recording our family life as it is mainly for the girls, so that they’ve got something to look at in years to come...[My husband’s] got a handheld mini thing, and, well I’ve got one as well but mine’s not in use at the moment.” F6

There are many different properties of an artefact that determines how it can be used. The size of an artefact, for example, impacts whether or not it can be carried around, and how much information it can display at any given time. This can often be a trade-off, for although small devices afford easy portability, they don’t easily display a large amount of information at a glance. As this woman put it:

“[My ideal technology] would probably be a calendar that I could hang on the wall that would then miraculously shrink and come with me.” F5

This is not to say that wall calendars don’t also suffer problems of overcrowding for the number of activities that sometimes need to be documented, which was another problem mentioned. A key point though was that wall calendars allowed a view of a week or more typically a month of activities at a time. Other devices and artefacts better supported views of a day at a time, or lists, for example. These different perspectives or views of information were suitable for different kinds of tasks. Typically, objects affording bigger fields of view were used in forward planning (such as wall calendars) and those affording smaller fields of view were used in reminding (such as PostIt notes and lists).

Another important property of reminding and planning tools was the way in which they afforded sharing. Objects kept in a handbag or pocket were very much treated and used as personal devices, typically not shared with anyone else. Wall mounted physical objects such as wall calendars and bulletin boards afforded shared viewing, by the family, for example, in a fixed physical location. Similarly, PostIt notes and

other physical reminders placed in specific locations were successfully used by households because of family members' intimate knowledge of the routines and habits of other family members. They therefore depended on people noticing and coming across them in the course of their everyday routines, and could be placed such that this would happen.

While electronic tools also supported sharing information with others, this is achieved in an entirely different way from paper. The electronic calendars mentioned by our sample helped solve group scheduling problems, and allowed people to view and control information from different personal perspectives through remote access. Such devices, however, did not have a persistent presence tied to a specific location for its users (as does paper). Thus, they depended on people deliberately accessing them (usually from work), and did not necessarily mean all users viewed the same information. Both kinds of sharing have their own benefits and drawbacks, as we will see shortly.

Different physical and digital properties therefore determine what aspects of planning and reminding any particular tool is suited to support. For working parents and households, no single tool or artefact seemed ideal to support all aspects of home life, work life, and the intermingling of both.

Managing Complex Systems of Artefacts

Unfortunately, using so many different objects and devices inevitably leads to problems of managing them all. For example, one problem frequently mentioned was making sure that multiple artefacts were synchronised and up to date with each other, as these excerpts show:

"I tend to mix and match. When an event is going to occur, I try to remember to put it on the wall calendar, in my filofax, in my desk diary, and in my group-wise email. But it doesn't always work. It's down to my memory. And I also use PostIt notes as well... You're going to think I'm the most disorganised person you've ever met!"
F11

"If there's a family event, theoretically it could hit six different places, which is quite daunting. I had no idea [until taking part in the study] that we had six potential places to mark one event. At the point when I hear about the event, I haven't got those six places to put the event on at the time when I hear of it. If I'm at work I'll do it on the work things, then think 'Oh, I must remember to come home and put it in my filofax.'" F11

When artefacts were not synchronised with one another, problems arose in that events were sometimes missed, or were double-booked. As a result, the people we interviewed actively tried to integrate information as much as possible to avoid this happening, and in order to plan effectively. One strategy to avoid these problems was to use one artefact as the "master" diary in that it was the one that tended to be the most complete and up to date. This was often the portable paper diary, but could also be the electronic diary at work:

"I can't have two [paper diaries] it would be too difficult". F7

"There is a wall diary in the kitchen that I sometimes scribble notes on, mainly things like birthdays, dentists. But basically once it's been put on there that's like

another reminder. These also go into the electronic calendar at work because I have to work off one diary otherwise I get confused” F13

However, integrating and updating information across such a mix of paper and electronic tools often took considerable time and effort. The people we interviewed described copying information from paper into digital tools, copying events off the electronic diary to a slip of paper, and then copying onto the home calendar, and so on. Despite this cost, these working parents were clearly reluctant to give up the benefits that each of these different artefacts provided them with even though they recognised the overhead involved. Such systems appeared to “work” for them, even if they often indicated that they were less than ideal, appeared disorganised, and seemed inefficient.

Lack of Synchronisation

Another related problem was the lack of access or synchronisation across spouse’s diaries. For men, lack of access to their wives’ diaries usually meant lack of access to the household diaries. These issues are summed up nicely in the following excerpt:

“because we have so many different diaries and things I’ll put reminders in my (Outlook) diary, which are essentially for work, but my wife can’t see what I’ve booked and I can’t see what she’s booked, we will write things down on the calendar at home, but I don’t check that daily, so things do get missed.” M7

It was not only men who described this problem, however. Many of the women also complained that they often wished that they could access their all important wall calendars on the wall at home when they were at work. One woman even described trying to take her wall calendar with her to work, but she found this problematic because of its size and eventually gave up. The other issue was that the calendar was useful because it was viewable by the whole family, so she had to remember to replace it on the wall each evening.

It is little surprise then, that some working parents (mainly women) used paper diaries as integrated work and home event diaries that they attempted to keep as up to date as possible for access anywhere, anytime. It underlines the fact that working parents often need to be able to view all events together in order to plan and manage time effectively. This includes the overlap of home and work events, and the events relevant to all members of the household.

It is also little surprise that when that person (usually the woman in the household) effectively acted as holder and manager of the main household calendar, that they frequently needed to issue reminders to their spouse and their children about upcoming events. An interesting issue here is whether easy access by all family members to an up to date and complete household calendar would alter the role of the “family manager” in these respects.

Privacy and Accountability in Home and Work Diaries

The ability to view the activities of other members of the household was clearly important for the smooth running of a household. No issues of privacy, or protecting one’s private time or space arose in the interviews when discussing the realm of home life. The family, as a unit, often needed to see what other members of the family were

doing in many different spheres of life (home, work, social and school) in order that activities could be planned and delegated. Tied to this, family members were often accountable for where they were and in order to be delegated to, and in order to help coordinate day-to-day activities.

However, when the discussion of working life arose, the issue of privacy and accountability was quite different. For example, we have already discussed the reluctance with which the working parents we interviewed used group electronic calendar applications. One of the issues was balancing the need for scheduling work group events with the need for privacy and control over one's time. As one woman put it:

"I understand the logic of the group diary but I find it personally very intrusive and I do worry about losing control, because it's like giving my time to someone else".
F9

She further talked about how such systems make it difficult to "ringfence" time she wanted for herself, either to get on with work activities, or to block out for personal commitments. To get around this problem, she often found it necessary to use arbitrary labels in her electronic work diary so that no meetings could be scheduled.

Other working parents we interviewed also complained of the fact that they were in effect forced to use group electronic calendars for work, but were not happy about it. These people, mainly women, said they continued to use their paper diaries alongside the group calendar, but were compelled to use the electronic calendar for group scheduling. The group calendar was inappropriate for any personal scheduling both because of being accessible only through a work-based PC and because of issues of protecting personal privacy. The fact was that many of these women needed and wanted to be able to intermingle and view together work and home based activities, but this would not be appropriate or easy to do in electronic calendar applications such as Outlook. The result was the use of the PC-based diary along with other diaries and calendars, with the attendant problems of managing and synchronising more than one artefact we have already discussed.

Lack of Active Reminders in Home (Paper-Based) Systems

While some of the features of these PC-based diary systems seemed ill-suited for household or personal planning and reminding, some of the people interviewed mentioned that there were nonetheless aspects of electronic calendars which would be very valuable for personal planning and reminding. Specifically, the use of time-based reminders or alarms were a feature which some working parents commented that would be very helpful more generally, such as for activities related to the household:

"...whereas here [work] I do reminders in Outlook and I'll get the reminder. So if it's something I know I've got to do personally like take the car in to be serviced, I'll set it to remind me the day before or on the day so it's handy but I don't do that at home." M7

"It would be good if you could just use a pop up wherever you needed to remember 'oh I must remember to get that'. We use pop ups here [work] for internal messages and it is quite useful because you get pop ups and it's right there and you just click on it to get rid of and it is handy." M7

“I don’t know what those little electronic diaries do, but it would be useful to have something like that, so it sets an alarm off to remind you to look at it. For someone like me who’s got such a naff memory as me, that would be quite nice, to be reminded to do something.” F2

Although it was not seen particularly as a “problem” that paper-based systems (such as those used in the home) did not provide some of the useful features of electronic, mainly work-based systems, it is interesting that some working parents could see their potential benefits, and suggests a possibility to innovate in the home environment.

Electronic Organisers: Barriers to Use

Given that electronic portable devices could potentially deliver some of the benefits that working parents say they want, one might well ask what the barriers are to their use. Why is it that working parents do not seem to take advantage of existing electronic devices for planning and reminding such as palm top computers? As we saw from the questionnaire data, only 20% of respondents reported owning a palm top, and this was confined mostly to men.

Some of the reasons for lack of uptake undoubtedly have to do with the fact that other kinds of artefacts, such as paper-based artefacts, have key affordances that handheld electronic devices simply cannot deliver. An obvious example here is the home wall calendar, which allows the family to see at a glance what is happening for the week or month ahead. As we have already discussed, small digital devices have very different properties that simply would not support what wall mounted displays accomplish.

Other factors have to do with the technological constraints or poor design of such technologies, which often cause people to abandon them and revert to more mundane artefacts such as paper diaries. Issues here range from too much time to access information, to the difficulty of entering new information, to objections to the number and size of objects that must be carried around:

“We used to have those little data recorders, but we didn’t find them particularly useful. It was a bit of a chore putting all the data in... it was a name, address, diary facility, a 20 quid Tandy thing. We found it too laborious and it was quicker to write, so we went back to paper diaries.” M8

“I think we need to better organise it, but I don’t know how to do it. These days I’m using a paper diary. I know there’s electronic stuff available. Actually I have an electronic organiser, and I’ve seen people using palmtops. But I think we’ve already got too much stuff in the pocket. I already feel it’s difficult. I’ve already got a wallet and a mobile phone, and sometimes we need a digital camera or something in the pocket too. For me, I don’t really think we need that sort of stuff. I think a paper diary should be enough.” M6

“[I would be interested in] a very compact, very small general diary, electronic diary, something that you carry around with you that is very small and you would use all the time...the Jornada tends to come with me when we go away but it would be more convenient if it was a bit smaller.” F13

Another set of issues has to do with the perceived difficulty of learning to use a new device, given the very little free time we have already noted that working parents have in their lives.

Interviewer: "Why don't you use an electronic organiser? Is that because of the obstacle of learning how to use it?"

M1: "Yes probably, I just haven't bothered. With computers, I have a lot of experience with them. I've used them since I was about 15, 16 years old, which for someone my age is probably quite exceptional. But my view is if I can't figure it out immediately then it's not worth doing because it's probably too complicated."

Interviewer: "Do you use an electronic diary?"

F5: "I've never used an electronic diary, no, nasty things."

Interviewer: "Why?"

F5: "If it's only going to work in one particular setting its not portable, I mean I'm thinking of one that's linked to my PC. The only one I've seen that's portable you seem to have to memorise an instruction book about the size of the Britannica encyclopaedia before you can use it." [laughs].

The last quotation also highlights another key issue. One must also consider that given that the working parents we interviewed already had a range of other artefacts in use in both their home and working lives (such as the paper wall calendar and the PC-based calendar at work), it might well be difficult to see how adding a new tool that could not easily be integrated with other artefacts might be viewed as adding to rather than subtracting from the complexity in their lives. For example, it might integrate with their work-based PC, but not with a home wall calendar or a spouse's paper diary.

This points to the larger issue of how the design of new technologies needs to be sensitive to, and find a place within, complex pre-existing ecosystems. This is very much the case in households with two working parents, where new devices and new practices will undoubtedly have knock-on consequences for many different people, and across the work-home boundary. Any new technology must fit easily into these ecosystems, or the cost of change and impact on ingrained practices will be perceived to be too great.

11.5 Summary

We have outlined the various ways in which working parents draw on different tools and strategies to help manage their time and activities at work, the time and activities of the household, and the way in which these are interweaved. We have seen how mainly it is the women in the household who take on the majority of the planning, delegating, coordinating and reminding of tasks for the household, drawing on a complex array of mainly paper-based artefacts to do so. We have further seen how both men and women use both electronic and paper-based tools in the workplace, and the issues and problems they often have in integrating and controlling the different demands of home and work.

In all of this, while the tools and practices used by working parents are adequate, the drawbacks and problems in these existing systems are clearly recognised. These shortcomings, combined with the undisputed need for artefacts and devices to support such activities, suggests an area where new technology might well be welcomed. This is not to say that introducing new technologies into ingrained practices will be easy, but the working parents we interviewed clearly expressed a need for better ways

of managing their lives. However, as these quotations show, the details of how this might be done is something they can only vaguely define:

“There must be a way of documenting all this.... I’ve tried all sorts. I’ve tried whiteboards in here and I’ve tried writing it all down on a big piece of paper. And then I got a sheet of paper that was divided up. So it had Monday to Friday down here, and then my husband’s and each of the children’s names along the top, and all the times and dates we were doing everything. Because they were doing lots of different activities at school. So “remember to take your PE kit and remember to do that.” So I’ve done all that when they were younger, to try and work in my head what everyone was doing. But I suppose you just get used to it and we all know what we’re all doing really, and different routines. But there must be a way to connect all this [i.e. all the bits of paper] together” F17

“it would be one box that could link all activities together, my daughter’s only seven but as she’s getting older she’s got more and more things arranged...so you need to know where to be to drop her off, pick her up... I think it’s just one box that controls your life really would be nice so you can organise everything e.g. all the mundane things like shopping lists, we have to phone each other to find out what we need, what do you want, is there anything you’d like me to get.. if you could just wherever you could remember oh I must remember to get that.” M7

As these quotations show, integration is clearly key to working parents’ ideal vision of a time management system. To do so, such a system must not only effectively handle the events and needs of a household, but cross the home-work boundary and allow the flexible control of home and work. To do this, it must comprise elements that can be viewed by, and displayed to all members of the family, be accessible while mobile and be accessible in the work place. It needs to take account both of the important affordances of paper in home-based environments, while recognising and taking advantage of the many benefits that digital systems can confer. Furthermore, it must be sensitive to the different needs and features of work versus home life, with issues such as privacy and accountability being treated differently in both spheres of life. Finally, it needs to be easily integrated with pre-existing systems and crucially be perceived as easy to use and to learn.

12. Ideal Technologies

In this last section of the findings, we look at what people said both in the questionnaire and in the interviews about what they hoped future technologies could do for them or what their ideal technologies might be. This is often a difficult topic for people to address. People generally find it easier to choose from a list of options about what technology might do than to generate their own ideas of what future technology might be. For this reason, we included both a checklist type of question in the questionnaire, as well as a more open-ended question in which people could (optionally) describe what their ideal technology might be.

12.1 Checklist

In the case of the checklist, we asked the 64 respondents “What would be the most important things that a new kind of technology could do for you?”. They were then requested to tick up to three of the items from the following list of ten uses:

1. Help me plan work and home activities more effectively
2. Help remind me of the things I need to do in the course of a day
3. Help me coordinate and synchronise my activities with other members of my family
4. Keep me in closer touch with the other people in my household when I’m at work or mobile
5. Keep me in closer touch with friends and family I don’t usually see in my day-to-day life
6. Save me time in getting domestic chores done
7. Save me time in getting work activities done
8. Entertain and provide a range of leisure activities for my family
9. Help me to find information to serve the needs of my family
10. Help me to find information to serve my working needs

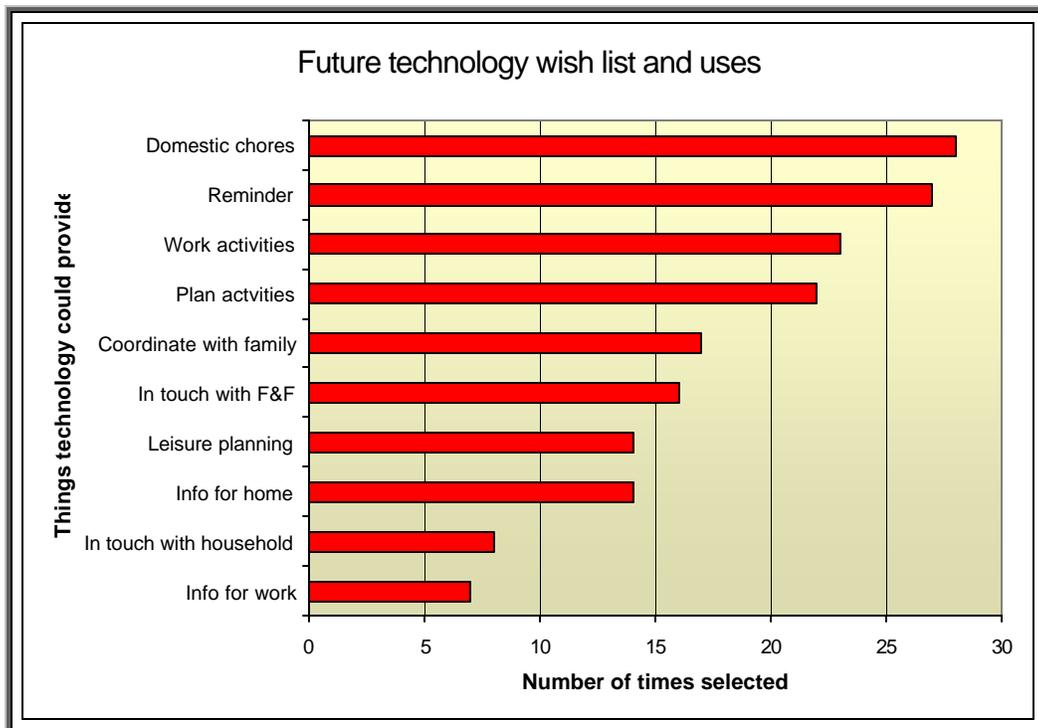


Figure 30. Frequency of questionnaire responses when asked “What would be the most important things that a new kind of technology could do for you?”

The results are shown in Figure 30. The graph shows that working parents would mostly like future technology developments to either aid with domestic chores or help with reminding them of the things they need to do in the course of a day. The next most highly rated technological wishes were for saving time in getting work activities done, and for planning home and work activities more effectively.

The middle range of response frequency covered co-ordinating and synchronising activities between members of the family or household and keeping in touch with friends and family that are not usually seen in the course of day-to-day life. Leisure planning, information gathering and searching, for both home and work purposes, and communication while mobile with family members were the least popular items for future development. This may be due to the fact that the questionnaire respondents believed that these needs were already met by existing technologies, or it may be that these areas were viewed as less important relative to other concerns. As we have discussed in an earlier section, the widespread use of the mobile phone in the role of household communication device suggests there is a strong need for this activity, but that the mobile phone already serves that need well. Information gathering, although not studied in detail here has been previously explored among knowledge workers and proved to be one of the most frequently used purposes of the Internet, for both work and home purposes (Sellen et al., 2002). This suggests that the Internet may already meet at least some of the information needs of our sample.

12.2 Open-Ended

Finally, questionnaire respondents were asked “If you could invent a new kind of technology to improve your life, what would it be or do? “ Thirty-one participants opted to respond to this question revealing some interesting, although not generally groundbreaking, ideas and comments. In addition, during the interviews, participants were asked the same question. Since the interview participants were a subset of the larger questionnaire sample, there was unsurprisingly a great deal of overlap in the ideas given. For this reason, the data from both the questionnaires and interviews are summarised together.

Several different clusters of ideas emerged. Some of these were based around suggesting improvements to existing technologies, such as making them more user-friendly, more accessible and comprehensible to the layperson, and more cost-effective. Other suggestions were in terms of technical improvements ranging from computers that are faster, more powerful and reliable, to batteries that last longer, so they need to be charged less often.

More specific ideas also emerged, however. Some had to do with better mobile or personal technologies:

Traffic and Transport

For example, one cluster of ideas addressed the dilemma of travel and traffic. Parents made suggestions for safer modes of transport for their children, a means to remove traffic congestion and additionally combined these thoughts with saving time and reducing journey durations. One working parent suggested the need for a safer way to

read while driving, with maps or directions, traffic reports and access to personal organisers projected onto the windscreen.

Email Anywhere

Many of the working parents also spoke of the need for better access to email, especially work-related email for access on the move and when on trains or stuck in traffic, but also when at home or away from home:

“When I’m on the bus, there’s just nothing to do. But if I could be going on, tapping into my emails, well, that’s a twenty minute trip - or more if there are traffic jams. Twenty minutes is twenty minutes, and that’s twice a day, that’s forty minutes a day. That’s quite a lot. So if I could travel and read my emails, that would be great!” F11

“I think what would be really good would be something that was a phone, that also had email access that also had some sort of Web access, like wap pages, that sort of thing, and an always on connection ...the sort of thing where I could send emails to my friends and family whilst on the train....If this device did have Web access I could look at my emails via the Web and if I could do that with the phone that would be very useful...it would allow me to sit on the train and clear out my emails.” M1

“It would be useful to be able to pick up emails, I suppose when I’m on holiday that’s the time when I notice it... When I’m away I can phone into my voicemails but I can’t get my emails and that’s a problem, like when I went away last time on holiday someone emailed me to do a proposal for them but didn’t leave me a phone message or anything but just kept emailing me, so when I got back from holiday, I felt really bad because the time had gone because the client lost the pitch then.” F4

Integration of Existing Devices

Another aspect that arose was the desire for better integration of existing portable devices such as integrating various combinations of the mobile phone, credit card, diary, calculator, address book, camera, voice recorder and so on. Suggestions included both physical integration of devices as well as wireless integration of data and functionality. One of the main motivations appeared to be the desire to carry fewer objects around:

“If there is some device which can integrate all the stuff together... I would definitely be interested in the mobile phone and the organiser together in one device. But the problem is the size and the weight must be comparable to this one [indicates his tiny mobile phone]. This one is not the most advanced – the best ones are even smaller – but this one is acceptable because you can carry it around. If it was larger, then it wouldn’t feel comfortable putting in this kind of pocket [shirt pocket], then it’s difficult to accept.” M6

“I think [my ideal technology would be] a small camera, something that you could carry with you which could take stills and moving images with good quality and sound would be handy.” M9

Integrated Home and Work Devices

However, as this person pointed out, though he wanted to carry one device, he also wanted the ability to use it in both work and home modes in order to segment the billing:

“What would also make a world of difference would be being able to use my work mobile, which I can’t use for domestic purposes. It would be wonderful if somehow there was a button on it, and I could push it to one side and it was marked “work” and I could push it to the other side and it said “home”. And when I push it to home, and I used the phone, the phone bill drops through my letterbox and I pay the bill. And when I push it to the other side, the phone bill goes to my workplace. That would make a world of difference to me. That’s not particularly hard to do and would make a radical difference. I don’t want to carry a second phone.” M11

This echoes some of the findings in the Home-Work Crossover section and the organisational as well as practical problems of using the same technology for different purposes that we have discussed earlier.

Reminding and Planning

Another clear category highlighted by these working parents was better technologies to support reminding and planning. Some of these were clearly mobile devices, and some were not. Ideas ranged from simple reminders, basic ToDo lists and remotely accessible shopping lists to more integrated and multifunctional organisers for both home and work purposes.

For example, one participant stated the use of a voice, touch, and keyboard activated electronic wall calendar would transform her life, allowing her to add appointments and activities while additionally having the ability to download the information onto a hand held mobile device or alternatively printing the information to provide a paper-based copy. A similar idea proposed a wall screen divided into sections, one for each family member, that simulated an organiser listing each individual’s activities and chores for the day and allowing for increased sharing of domestic chores between the family while taking into account additional commitments and schedules. In fact, more generally, ideas proposed seemed to emulate many of the features that working parents already used in more mundane embodiments (such as paper wall calendars) augmented by the benefits of digital technology:

“[My ideal technology] would be something like the calendar that I have in my loo but it would be something that I could carry around with me, but that maybe my family could have one each as well and they could all enter things on it so that it would remind me and then it could flash up with somebody’s birthday, something that would just run my life for me, that would be good.” F14

Others had more vague ideas of what such a system would look like, but seemed to think that electronic tools might be able to help in some way:

“[I’d like a] little chip to put into my head [laughs] so it can store things so I can remember without having to keep consulting things or forgetting completely, and in a month’s time I remember what it was. Losing things. I don’t know what those little electronic diaries do, but something like that, so it sets an alarm off to remind you to look at it. For someone like me who’s got such a naff memory as me, that would be quite nice, to be reminded to do something.” F2

As we have previously noted, the whole area of reminding and planning for working parents is already heavily dependent on many different tools and artefacts, both paper and electronic.

Work-Related Ideas

Some of the mobile and time management ideas mentioned so far would be useful in support of work activities, but some of the suggestions were more specifically technologies to support work. This included suggestions of the use of a universal galactic encyclopaedia, a shared (electronic) whiteboard for a project team (which presumably could be equally as effective for working from home, or remote work) and, more specifically, the ability to access digital art images from major world galleries for use in lectures and presentations. Again, the theme of integration of existing pieces of technology emerged:

“For work an all-in-one piece of equipment because I tape my focus groups and I video them and I do presentations, so there’s lots of different bits of equipment which I’m sure will one day be one piece of kit which does the whole caboodle, I just put my kit there and it will do everything.” F4

Domestic Technologies

Turning to the home environment, domestic appliances and technologies were a major focus for participants, especially for the women. Intelligent washing machines, irons and cookers were among some of the suggestions, but often the desire for general time-saving technology and freedom from housework was expressed:

“Technology to help around the house which would be ideal, something to help keep [my son] occupied which would be really good, nothing really for work which would benefit.” F1

“Something to do with keeping the house clean and tidy, preparing meals, mundane domestic chores.” F9

“A manufacturer of time I think, everything is just so hard pressed, anything which saves time, anything at all, so for example, I recently bought a new washing machine which does a wash in 30mins and that to me is a boon especially yesterday when I had to get a tumble dry and iron through in the morning.” F6

“Someone to clean the house, would love an automatic cleaner!” F15

“I would love a piece of technology that could produce a wholesome meal for my family every night, so I think that would be a robot, that would be my biggest thing that I could remedy because I’m just obsessed about that.” F4

For men, suggestions had more to do with wiring up the technology in the house, or even the house itself, to enable better control and monitoring of the state of the home environment:

“the ideal piece of software or piece of hardware would be able synchronise the whole lot, laptop, mobile, fridge” M10

“say the whole house was rigged up electronically and you could tell if you’d left the gas on, or if the front door was locked, or the video was set, you’d left a window open without having to return home, because I don’t work that far away anyway it’s not that a big deal but if I was a long way away having more home integrated technology would be useful.” M3

Finally, other ideas had to do with keeping in touch with the family, for example, knowing the whereabouts of children. Also mentioned was collaborative computer gaming equipment so that the family could play together, and a better system for helping to organise and store family photos and videos.

“Being able to store photographs and look at them without having hoards and hoards of the paper copies, I’ve got stacks of them at home and trying to get them in an album and knowing when you took them and all the rest of it”. F12

12.3 Summary

Working parents often struggled to specify what their ideal technologies would be. Flippant answers were sometimes given about devices to put children to sleep, devices that would miraculously give them more time, and so on. This reflects the sheer amount of demand on their time that working parents deal with daily, and the belief often expressed that it is the ordinary time-saving technologies (such as dishwashers and washing machines) that really change their lives. However, there are nonetheless important pointers in the answers that they do give for the kinds of new technologies that might be valuable to them. The general theme of integration points to ways in which existing technologies they rely on might work together better, or be more streamlined for use, especially in portable situations. The theme of better integration and control across the home-work boundary is also echoed in the interviews. Perhaps strongest is confirmation of the need for better ways of supporting planning, organising and reminding. Here, again, integration and ease of use were key themes. It further confirms that technology which will simplify life rather than add complexity are those which will be most valued by working parents.

13. Implications and Conclusions

The study of working parents described in this report is a broad brush study which has sought to define some key characteristics of a segment of the population who have demanding home as well as work lives, and who are highly mobile in the service of home and work. Our goal has been to begin to sketch a picture of this lifestyle. The central questions we have concerned ourselves with include: What are the particular sorts of activities this lifestyle encompasses? What are its main features and defining characteristics? What do working parents strive for and what do they value? What are the stresses and strains their lifestyle imposes? What are the roles, routines and strategies that help them cope? And, what are the tools (both mundane and technological) that they draw upon to help them cope?

In doing so, the ultimate aim has been to be able to pinpoint some areas in which there are good opportunities for developing new technologies, and to likewise make decisions about what kinds of technologies might *not* be appropriate. Because we have cast our net wide, and explored many different aspects of working parents’ lives,

and because we have aimed mainly to *describe* rather than to *hypothesise* about the nature of their lives, the main output has been to begin to isolate within this picture places where we might dig deeper to look for appropriate technological solutions. As such, we now have the basis and rationale for more in-depth and focussed investigations in order to develop those solutions.

13.1 Life as a Working Parent

The results of this study show that the lifestyle of working parents is one in which the sheer number of demands from home and work form a complex array of interwoven threads of activity which must be managed from day to day. Much of this complexity, and the overhead of management it imposes, comes from home life, and the myriad activities that must be planned, executed, and monitored for the household. All of this is set against the backdrop of working life, and a different set of demands that work imposes. For the working parent, life is, in a sense, one long and constantly changing ToDo list, with no clear end in sight. As this working mother put it:

“It’s about always rushing ahead, thinking about all the things I’ve got to get ready sorted for tomorrow. I find the only way I can cope with that, is that I’ve got to write everything down.....And so that’s stressful, but I don’t know how you can get over that, because even if you sat down on a Sunday and thought through the whole week, you’d still go back to it and add keep adding to that. I don’t know whether as a mother or a working parent that ever goes away, because you’re always thinking about the next thing.” F17

Despite the obvious stresses inherent in such a lifestyle, and despite the lack of free time that many other people enjoy, most of the working parents we spoke to were nonetheless happy with their lives, and said they would prefer to work rather than not to work. While there were clearly times that they felt it was “all too much”, it was also clear that from day to day they had a range of ways to cope with the demands on their time, the often unpredictable nature of those demands, and the work of managing different kinds of demands across home and work boundaries.

These coping strategies, and the ways in which different artefacts and technologies played into them, form the main findings from the study. These can be summarised as follows:

The sanctity of the home: The picture of home life was one which was not only fraught but one which was considered sacred. Not many of the working parents we studied either worked at home on a regular basis, or brought work home after hours. Home time was time for family. Partly this was a conscious choice as these parents often spoke of deliberately leaving work at work. Partly this was because the demands of home life were such that no time or energy was left for work. But partly also this was because the technology to do work quickly and easily from home was not in place in most households. Some working parents did express the desire for better technologies to support work from home, not in order to do extra work, but rather to increase their flexibility to leave work early by taking some tasks home with them, or by allowing them to make some preparation for work tasks the next day.

The intrusion of home on work: If home was considered sacred, not so the workplace. Many of these working parents helped cope with the demands of home by taking care of home-related activities during work time using various technologies, most especially the telephone (fixed or mobile), email and the Web. Here we saw in particular that this was usually the case with women. However, whereas women often initiated such activities, men were more likely to be the recipients of home-related communications, and as such could be delegated home-related tasks. While men were more eager to control the intrusion of home into working life, they were often obliged to remain available for communication from other family members.

The woman as household manager: Many of the sex differences we saw in the findings revolved around the fact that women, whether by choice or delegation, controlled and managed the household. This manifest itself not only in the shorter hours women tended to work but also in the extent to which more of the household chores and care of children were also the responsibility of the mother. These working women travelled less than men for work, stayed away from home less often than men, and spent more time than men doing the “after school” activities such as picking up children, taking them to music lessons and sports, and doing shopping. In addition, working women rather than men almost always held and controlled the household calendar, and in doing so, oversaw household activities, reminded other family members of them, delegated tasks to other family members, and generally acted as the communicational hub for the household. In taking on this role, women were more likely to mention the stress associated with having to “hold it all together”. This was in contrast to men who were more likely to mention the stress associated with work.

The car as a mobile habitat: Another key feature of these working parents’ lives was their mobility. Typically, each working parent would make many different journey “segments” in the course of a day, often with short or transitional stops between segments to pick up or drop off children, and to take care of domestic chores. With each segment, not only would the destination change but, often, so too would the passengers, the items carried, and the purpose of the journey. Perhaps unsurprisingly, then, the use of the car was the best way to cope with such demands, and was the predominant mode of transport for all activities. The car, in effect, became for working parents a mobile habitat which could pick up and unload people, take various items from one place to another, and was suited to the complex schedules and tight time constraints working parents had to fit within. Within this mobile habitat, working parents accomplished a range of different activities, often through the mobile phone. This included conducting work-related business and managing the household. The car was also a place for thinking and planning, and for making the mental transition between work and home, mirroring the geographical transition.

The nature of routine: Another coping mechanism for demands on working parents was the use of household routines. These were quite clearly important for the smooth running of the family, and particularly for those times of the day in which there tended to be more time pressures (such as in the morning at home). However, such routines could not be described as rigid ways in which sequences of activities occurred. Rather, routines were mutually understood “rules of thumb” that households oriented to. In other words, they were unspoken rules about who in the household *usually* does something, how something *usually* happens, and in what order things *usually* occur. On top of these implicit rules, working parents could be seen to

spend time making explicit plans with the family and with childminders for the day or week ahead. It was these plans that were often agreed upon and noted in calendars, notes and diaries, not the regular routines of the household. In addition, even though routines formed the backbone of daily life, the complexity and inherent uncertainty of life meant that plans were often breaking down, and as a consequence, re-planning frequently needed to occur. This re-planning was often handled on-the-fly using various communication technologies (especially mobile telephones).

The mobile phone for household communication: The mobile phone and the paper diary emerged as the indispensable mobile “technologies” for these working parents. Despite the fact that the mobile phone was provided and paid for by the workplace, it was most valuable as a tool supporting the household. Its main role, especially for women, was for household micromanagement. E.g.,:

- for tracking the rest of the family to help coordinate and schedule events;
- for contacting other members of the family to delegate responsibilities and re-plan when necessary;
- for confirming actions had been taken by other members of the family (monitoring) and reminding when necessary;
- for being available in case of emergencies;
- and for being aware of where other family members were for peace of mind.

Calls between family members were often brief, requiring little content because of the high degree of background context that family members shared. In this household role, it often provided a separate home-related communication channel into the workplace and while mobile. For some working parents it also provided a work-related communication channel out of the workplace, but this was more likely to be the case when they were mobile: either in preparation for work on the way to work, or for winding down work on the way home.

Diverse ways of supporting reminding and planning: The coordination of work and home life, and the complexities of planning and scheduling meant that working parents relied on many different devices and strategies for doing both home and work-related reminding and planning. The households in our study reported using on average four (and sometimes up to seven) different diaries and calendars to accomplish this. In particular, we found:

- Home related artefacts were mainly paper-based, usually involving a paper wall calendar, paper diary, paper lists, Postit notes and other customised paper artifacts. The strategic placement of things, including bits of paper also featured heavily in strategies used. It was mainly women who did this kind of management and planning, and it was mainly they who updated and supervised the process. Many men did not take part in this process at all, and did not carry artefacts in support of it, except inasmuch as they were on the receiving end of reminders and were often delegated tasks to do.
- Electronic devices featured more prominently in work-based reminding and planning, although usually in combination with paper-based artefacts. For example, PC-based diaries were very often used especially for group scheduling, but often this was combined with the use of a paper diary that was carried to meetings. Lists and PostIt notes were often used to draw attention

to more urgent tasks. Both men and women managed and controlled the use of a variety of artefacts in the workplace.

- Women were more likely than men to merge home and work events in a single artefact, such as a wall calendar or paper diary. But even then, half of the women preferred to keep work and home artefacts separate. For those that did integrate, this was so that they could effectively view the interrelationships between work and home events for more effective planning. For those who segmented work and home, this was because the features of home and work devices were different, and therefore served different purposes. For example, the PC diary was good for group scheduling, but could not be carried around, and thus was not suited to home planning and reminding. Many of the women were able to contain work-based planning and reminding within the office.

Most working parents recognised that there were many problems with the way they currently managed both work and home activities, especially women. Aside from technologies to better support domestic chores, better technologies to help with reminding and planning home and work activities were most frequently mentioned as the new technologies they wanted and needed.

Little evidence for any integrated home-work technologies: Analysis of the technologies that these working parents used for home, for work, and for both purposes, showed that the most frequently used technologies were: fixed line phones, desktop computers, printers, email and the Web. All, however, are used in a *segmented* way. That is, all are used as *separate and dedicated* devices or services for work, or for home, but not the *same* device or service for both purposes. The only technologies or artefacts which indicated any significant degree of integrated home-work use (on the same device) was the mobile phone and the paper diary. This is particularly interesting because there were often organisational policies in place that discouraged the use of the mobile phone as a crossover device. This echoes the earlier finding of the strong push to use the mobile phone for household purposes. In the case of the paper diary, only a quarter of the sample used it in an integrated way. To understand its use, however, it must be viewed as one component within the larger ecosystem of tools and strategies working parents used for reminding and planning.

Desire for better crossover technologies: Despite the fact that most technologies were used in a segmented way for home and work, working parents also recognised and expressed the need for technologies that better allowed them to integrate home and work demands. They expressed the problems of the separation of home and work data, having to carry or own too many different technologies, and the overhead of having to learn and manage too many technologies. The inability to control or filter access and intrusion of home into work, and work into home was the flipside of the problem for technologies such as the mobile phone that did allow home-work crossover.

13.2 Implications

Taken together, these findings allow us to make some “best guesses” about the kinds of new technologies working parents might value and the kinds of activities that we

might usefully support within their lifestyles. These areas can then be targeted as topics for further, more in-depth study. In addition, the results suggest areas in which we might be more cautious. Some of the features of the lifestyles of working parents warn us against certain classes of technology as being poorly matched to this segment of the population. These are the implications we cover in this final section of the report.

Household Management and Coordination

One area that the study suggests has great potential for technological innovation is that of the management and coordination of the household. While generally this is the domain of the working mother, we have seen that all members of the family are affected by it, and that many different tools and strategies are brought to bear in order to try to bring order into their chaotic lives. The way this is currently done using a plethora of different artefacts at home, at work, and while mobile, creates many different problems. These include the lack of synchronisation of information across different artefacts at home and at work, lack of access to a spouse's or to the household calendar, and the effort required for manual integration and updating. In addition, while there is a clear need for better integration across the home-work divide, the study shows that there may be different features required for home and work artefacts to support effective planning and reminding. Take sharing for example. Household calendars need to be shared by the family unit. Here it is often crucial that all family members have access to this information at-a-glance, in a shared space. Hence the ubiquity of the wall calendar in the home. On the other hand, access to work activities is often more carefully controlled in the work domain, occurring only in order to enable group scheduling. At work, people are more circumspect about their privacy, and more likely to use various ways of restricting access to their personal calendars.

Additionally, we have seen that home and work planning and reminding may be very strongly tied to intra-household communication. One reason for this is that the household, in a sense, shares a ToDo list, usually managed by the mother, who both delegates tasks and checks to see that they are done. The manager of the household often needs to communicate with other family members in order to remind them of tasks, or to monitor progress on those tasks. In addition, even the best laid plans may need to be changed as unpredicted demands arise and as circumstances go awry. In this case, re-planning can depend on knowing where other members of the household are, and what their plans and activities are.

There are many suggestions implicit in these findings for how one might design a technological system to help working households. This includes:

- A central database of household events that all family members can access, including a household ToDo list.
- A wall mounted large display for the family in the home, where at-a-glance activities can be seen and modified.
- Portable devices for working parents that allow access to the central database from anywhere, at anytime.

- The ability to view and plan work activities on top of household activities, and to be able to control and input work activities as a layer of data separate from household activities.
- The use of active reminders that can be triggered on the basis of time, location, or even inferred activity through mobile devices, at home or at work.
- Household awareness services that allow family members to see generally where other members of the family are (at work, at home, or travelling) in order to plan or to confirm where people are.
- Other services accessible from the household wall mounted display. This might include, for example, the ability to post text messages from a mobile device or from work to the wall at home, to automatically send messages to others from the wall at home, or to access other home-related databases (contact lists, important phone numbers, or community dates and services).

All of these initial ideas of course need to be investigated in a more focussed piece of research in order to help shape an optimal solution.

More Implications for Technologies in the Home

In addition to tools for household management, there are other implications that come from the study which find their place in the home environment. The picture of home life we have sketched is one which is generally busy, lively, but often stressful. This has some important implications for the kinds of new technologies that might be introduced into the home, and also those which would be inappropriate. For example:

- **No time to learn.** Working parents' lack of time means that in general, any new technology requiring time and effort to learn will present a major obstacle to its purchase and use in the home. Working parents simply have no time to "tinker" or to play with new devices and services. This means any technology, including household management technologies, must be intuitive, easy to use, and lightweight in providing only the most necessary features.
- **Technologies which fulfil a clear need.** Any new technology must fit into a complex and busy ecosystem already filled with more conventional technologies and artefacts (e.g., paper-based). A new technology will likely be viewed as valuable only if it is seen as fulfilling a clear need or providing clear value. A gadget that merely adds to the complexity of life will be viewed as frivolous and unnecessary.
- **Entertainment for children.** There may be scope for developing better leisure or entertainment technologies. However, because of lack of leisure time, these should not be aimed at the parents, but at the children in the household. Technologies to entertain and especially educate children are likely to be viewed very positively. An added value is providing these for very young children because they will help to keep them occupied, preventing them from making further demands on parents, especially during busy times of the day (such as the morning).
- **Some work-related technology.** While home was viewed as sacred, and a domain to keep work out of, many working parents expressed the desire for

technologies to allow them to quickly and easily take care of work-related tasks. While this is an area that would need further investigation, quick access to email and work-based databases were some of the services mentioned.

- **Integrated home -work technologies.** Because most working parents want to avoid owning and using more technology than is necessary, the best approach to providing work-related tools may be integrating them into home-based computing devices. Such devices would have to allow access to different features and services for work versus home activities. It is likely the ability to bill separately for the cost of work versus home activities would be an important aspect of such technologies.
- **Help with domestic chores.** Finally, domestic technologies were clearly highly valued to help cope with the demands of day to day life. While HP is not generally in the business of developing these, there are some appliances or services which might help with some of the more stressful chores (such as shopping or meal planning) that would be appropriate and would ease the burden of family life. This is an area which deserves further investigation.

More Implications for Technologies at Work

We have already discussed better support for work-based planning and reminding, and its integration with household management. This is related to the more general set of findings that point to the many ways in which working parents accomplish home-related activities at work, and control the intrusion of the home sphere into the working one. There are marked sex differences in the way this is done, however, both men and women are very conscious of the boundary between home and work. Further, they have to contend with a range of different organisational policies and cultures either permitting or discouraging the use of work-owned technologies for home use. Despite this, it is clear that working parents often need to accomplish home-related activities in order for them to cope more effectively with work. To do this, they use the tools and technologies that are to hand. This study shows that technologies in the workplace could be better designed to take account of the need for such crossover activities. For example:

- **Controlling access from the home.** Intra-household communication at work was a frequent and vital part of being able to cope with the demands of being a working parent. Different technologies were used for this, the mobile telephone being important in providing a home-related channel into work. However, the use of the mobile for home resulted in a number of problems. This included controlling access of who can reach you in work situations (calls from home only, work only, or both), and also controlling the way one was notified through the mobile depending on whether a call was home or work-related. In particular, many working parents wanted to be available for emergencies, but not interrupted at work by family members. Many calls from home, for example, were for delegating or reminding of household tasks. This points to the fact that more specialised messaging devices and services could be developed that allow better control of work and home access, and more flexible options for alerting or taking messages. For example, a working parent could put a phone in a mode for emergency calls from home only.

Callers could choose to leave information about ToDo tasks only as voicemail, or to pop up as text reminders in appropriate places, at appropriate times.

- **More ways of communicating with the home.** In addition to controlling access into the workplace from home, equally, working parents might want more flexible ways of sending messages from the workplace into home. For example, working parents might value a service that allows them to post text messages at home on a wall-mounted display in the kitchen. “Text to place”, as opposed to “text to person”, suggests many new kinds of devices and services that might be developed to aid intra-household communication.
- **Monitoring the whereabouts of family.** Related to this is the need to often monitor or quickly confirm the whereabouts of a family member from work. Simple location awareness services might be valuable for the workplace. For example, an icon on the PC might provide a fast and easy way for a working mother to make sure that a child has made it safely to school by polling location information from a device worn or carried by that child. Obviously, such technologies need to be carefully researched to understand the issues surrounding privacy that this class of technology will inevitably raise.
- **Integrated work-home technologies.** In addition to household communication, we saw that the need to accomplish other home-related activities using the Internet, email and or telephone could create problems of using work-owned technologies when employers’ policies were in place to try to prevent their use in this way. In addition, there were sometimes practical problems of the resources needed (contact numbers, email addresses, and other information) being inaccessible from the workplace. This points to the need to have information resources relevant to the home available when not at home. In other words, at work, it might be valuable to working parents to be able to quickly gain access to home-related contact lists, household details and documents in order to quickly take care of domestic tasks. Quick access to this through fixed line networks or through wireless networks accessed through a mobile device are options to think about here.
- **Partitioned billing.** Analogous to the case of work activities at home, carrying out home activities at work using integrated technologies implies that, here, too, different billing structures to allow separation of home and work use might be valuable. This might encourage organisations to permit use of work-owned technologies, if home use could be partitioned and paid for by the employee.
- **Sex differences.** Finally, because of sex differences in the way home activities are managed at work, another implication is that focus groups will likely find significant differences for the technologies working mothers would want in the workplace versus working fathers. This would need to be an important part of any further in-depth investigation into any of these areas.

Implications for Mobile Technologies: The Car as a Mobile Habitat

The heavy reliance of working parents on the car has a number of implications for the place of technology in working parents' lives. As we have seen, the geographical transition between work and home is mirrored in a mix of activities both on the part of working parents, as well as other members of the household. Obviously, the implications are different for driver and passenger. Technologies for drivers need to be hands-free, eyes-free, and impose low cognitive overhead if they are to be used at all while driving. Examples to support activities for drivers that might be valuable to working parents include:

- **Traffic services.** Help with coping with traffic, and the uncertainties and planning of optimal routes. Such technologies already exist, but most are not effectively hands-free and eyes-free. While perhaps outside the scope of HP's business, these technologies could be designed much better than they currently are.
- **Mobile reminding and planning.** Services to support reminding and planning (both home and work related). A great deal of mental planning both for home and work happens in the car. This includes not only thinking of ToDo items while driving, but also mentally running through plans and activities for the day ahead, and remembering the details of events that might be written down in a paper or electronic diary. Voice input and output might be quite useful here. One can envision services that allow drivers to speak to and query their personal diaries, to run through ToDo lists for the day, to query their diaries for specific times and events, and to add items to a calendar. In the case of adding items, this might be done by creating "spoken Postit notes" which one could add either to a work ToDo list, or a home ToDo list. A driver might even be able to specify where the note is eventually received as a reminder (on the work PC, on voicemail, on a wall mounted display at home), and the form it is delivered in (as a spoken note, as text, and so on).
- **More flexible mobile phone services.** The mix of work and home communications that occur in the car suggests that mobile phone services might take advantage of this fact and allow people much greater flexibility to deal with home and work calls. For example, a single mobile phone device could have associated with it different home and work lines, contact lists, ring tones, and answering services for home and work. Signalling one is in the car by placing the device in its handset could allow a driver to route calls from the fixed line at work or home to the appropriate mobile line, to screen calls as they come in, and to take messages within the appropriate message service. All of this would be invisible to the caller, but would allow the driver to deal more effectively with the mix of home and work activities that occur while driving.
- **Family awareness.** If a mobile device "knows" it is in the car also means that this information could be sent to other family members to let them know you are, for example, on the way home from work. Such information could be posted on the family wall display, for example, or be available through a

spouse's family awareness service on a mobile phone or palmtop. Here it may be enough to simply signal one is "in the car" although undoubtedly there will be times when more precise location information will be useful.

Aside from support for the driver, one could also provide more technological support for passengers, or for people waiting or stopping in cars:

- **Mobile entertainment and educational technologies.** Many working parents mentioned the time children spend in the car. Not only can this time be spent doing homework, and catching up on the day's events, but it can also be a stressful time when children fight. This suggests that devices and services that provide entertainment for children might be highly valued by parents, especially if there is an educational element. Another important factor here might be providing personalised entertainment to children because their preferences change radically with age. Streaming audio-visual media into fixed devices in the car, or onto portable devices carried or worn would seem to be the best approaches here. Such concepts need not be limited to children, however. We have seen that working parents are highly dependent on the radio for entertainment and news when in the car. A richer set of "infotainment" services might help adults make the most of time spent in the car, whether they are driving or waiting.
- **Information linked to "landmarks".** Destinations in the car are often part and parcel of more complex ToDo lists in which things or passengers need to be picked up or delivered. These transitional places are often landmarks for people in the sense that they visit them frequently and have well defined tasks they need to carry out when they go there. For example, landmark places might be the school, the gym, the shop, the post office, and so on. In such places, working parents might be able to access from their cars services linked to these locations. This might include lists, household communication, details about the place they are visiting (such as opening hours, policies, schedules, events), and even access to services that allow transactions to take place prior to entering, or when leaving a place.

13.3 Summary

Central to the lifestyle of working parents is the extent to which the demands and complexities of family life shape and determine every other aspect of life. Such are the demands that they impinge on and intrude into the working sphere. Such is the complexity that planning, and the frequent need to re-plan, is part and parcel of everyday life. This study has shown the many ways in which working families use routines and strategies to cope with these demands and deal with contingencies as and when they arise.

We have also seen that these routines and strategies are often heavily reliant on artefacts and technologies. Paper-based artefacts litter the home and work environments alongside computer and communication technologies. These tools help make the connections across the home-work boundary that underpin the strategies and routines working families use. Likewise tools are used while mobile, most especially

the mobile phone, to maintain connections and deal with both home and work activities.

There is little doubt that innovations such as the mobile phone have allowed working parents greater flexibility to manage the demands of everyday life. Likewise computer technologies and the activities they support through, for example, the Internet and email, have enabled working parents to develop new ways of coping with a busy family and working life. We have seen in this study, however, that technologies could do this better if designed with the needs of working parents in mind. In particular, if we take into account where working parents spend their time, and what activities they do in those locations, there is considerable scope for innovation. In particular, one of the main themes that has emerged as a result of this research is the extent to which new technologies could allow working parents more freedom to accomplish crossover activities (work from home, home from work, and home and work while mobile), and the ability to filter and control such crossover activities.

It is only through research which seeks to understand people's whole lifestyles that we can adopt this perspective. More focussed investigations to develop specific solutions are needed, but they too will need to adopt a similar perspective: one that encompasses and explores people's roles, motivations and activities across the boundaries of space and time. Such an approach is significantly different from traditional notions of "business" versus "consumer" users, and has very different implications for the kinds of technology we might build.

14. References

- Barnett, R.C. (1994). Home-to-work spillover revisited: A study of full-time employed women in dual-earner couples. *Journal of Marriage and the Family*, 56, 647-656.
- Becker, P.E. & Moen, P. (1999). Scaling back: Dual-earner couples' work-family strategies. *Journal of Marriage and the Family*, 61, 4, 995-1007.
- Beech, S. & Geelhoed, E. (2002). User attitudes towards wireless technology: 802.11b. *HP Technical Report, HP-2002-22*.
- Bolger, N., DeLongis, A., Kessler, R.C., & Wetherington, E. (1989). The contagion of stress across multiple roles. *Journal of Marriage and the Family*, 51, 175-183.
- Bond, J.T., Galinsky, E. & Swanbert, J.E. (1998). *The 1997 national study of the changing workforce*. New York: Families and Work Institute.
- Brannen, J., Moss, P., Owen, C & Vale, C. (1997). Mothers, fathers and employment: Parents and the labour market in Britain (1984-1994). *Research Report No. 10, Department for Education and Employment*. London: HMSO.
- Brines, J. (1994). Economic dependency, gender and the division of labor in the home. *American Journal of Sociology*, 100,3, 652-688.

- Brown B., Green N., & Harper R. (Eds.), (2001). *Wireless world: Social and interactional aspects of the mobile age*. London: Springer-Verlag.
- Brown, B., Sellen, A.J., & O'Hara, K. (2000). A diary study of information capture in working life. *Proceedings of CHI 2000*. New York: ACM Press.
- Burgess, A. (1997). *Fatherhood reclaimed: The making of the modern father*. Ch. 5 "The Working Father: A Different World". London: Vermilion.
- De Gournay C., (2002). Pretense of intimacy in France. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press.
- Demo, D.H. & Alcock, A.C. (1993). Family diversity and the division of domestic labour: How much have things really changed? *Family Relations*, 42, 323-331.
- Fleuriot, C. (2001). *An Investigation into the Management of Time in Complex Lifestyles*. Ph.D thesis. University of the West of England.
- Folkman, S., & Lazarus, R. S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Fortunati, L. (2002). Italy: Stereotypes, true and false. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press.
- Frohlich D.M., Dray, S. Silverman A. (2000). Breaking up is hard to do: Family perspectives on the future of the home PC. In press for *Special Issue of International Journal of Human Computer Studies on Home technology*.
- Graves Petersen, M., Halskov Madsen, K. & Kjaer, A. (2002). The usability of everyday technology: Emerging and fading opportunities. *ACM Transactions on Computer-Human Interaction*, Vol. 9, 2, 74-105.
- Green, N. (2001). Who's watching whom? Monitoring and accountability in mobile relations. In B. Brown, N. Green & R. Harper (Eds.), *Wireless world. Social and interactional aspects of the mobile age*. London: Springer-Verlag, 32-45.
- Greenstein, T.N. (1996). Husbands' participation in domestic labour: Interactive effects of wives' and husbands' gender ideologies. *Journal of Family and Marriage*, 58, 585-595.
- Gumpert, G., & Drucker, S. J. (1998). The mediated home in the global village. *Communications Research*, 25, 4, 422-438.
- Hatten, W., Vinter, L. & Williams, R. (2002). *Dads on dads: Needs and expectations at home and at work*. London: Equal Opportunities Commission.
- Hill, E.J., Hawkins, A.J., Ferris, M. & Weitzman, M. (2001). Finding an extra day a week: The positive influence of perceived job flexibility on work and family life balance. *Family Relations*, 50, 1, 49-58.
- Hindus, D., Mainwaring, S., Leduc, N., Hagstrom, A. & Bayley, O. (2001). Casablanca: Designing social communication devices for the home. *Proceedings of CHI 2001*, Seattle, WA. New York: ACM Press.
- Hughes, J. A. O'Brien, J., Rodden, T. (1998). Understanding technology in domestic environments: Lessons for cooperative buildings. In *Proceedings of the 1st*

- International Workshop on Cooperative Buildings (CoBuild '98)*, N. Streitz, S Konomi, and H.J. Burkhardt, (Eds.) Vienna, Austria: Springer-Verlag.
- Janning, M.Y. (2000). Blurring the public and the private: Work-family boundary permeability for professional married co-workers. Dissertation Abstracts International. *The Humanities and Social Sciences*, 61, 4 .
- Katz J., Aakhus, M., (2002). Making meaning of mobiles: A theory of Apparatchgeist. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press, 301-320.
- Katz, J.E. (1999). *Connections: Social and cultural studies of the telephone in American life*. New Brunswick, NJ: Transaction Publishers,
- Kay, T. (1998). Having it all or doing it all? The construction of women's lifestyles in time-crunched households. *Society and Leisure*, 21, 2, 435-454.
- Kopomaa T. (2000). *The city in your pocket: Birth of the mobile information society*. Helsinki: Gaudeamus.
- Kraut, R., Scherlis, W., Mukhopadhyay, T., Manning, J. & Keisler, S. (1996). HomeNet: A field trial of residential Internet services. *Proceedings of CHI '96*, 284-291. New York: ACM Press.
- Labour Force Survey (Spring 1999).
- Leiter M.P., & Durup M.J., (1996) Work, home, and in-between: A longitudinal study of spillover. *Journal of Applied Behavioural Science*, 32, 1, March, 29-47.
- Licoppe C. & Heurtin, J. (2002). France: Preserving the image. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press, 94-109.
- Ling R. & Yttre, B. (2002). Hyper-coordination via mobile phones in Norway. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press, 139-169.
- Mante E. (2002). The Netherlands and the USA compared. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press, 110-125.
- Milkie, M.A., & Peltola, P. (1999). Playing all the roles: Gender and the work-family balancing act. *Journal of Marriage and the Family*, 61, 476-490.
- Mynatt, E., Rowan, J., Jacobs, A. & Craighill, S. (2001). Digital family portraits: Supporting peace of mind for extended family members. *Proceedings of CHI 2001*, Seattle, WA. New York: ACM Press.
- Nippert-Eng, C. (1996). *Home and work*. Chicago: University of Chicago Press.
- O'Brien, J., Rouncefield, M., & Hughes, J. (2000). At home with the technology: An Ethnographic study of a set-top-box trial. *ACM TOCHI*, Vol. 6, 3, 282-308.
- O'Hara, K., Perry, M., Sellen, A.J. and Brown, B. (2001). Exploring the relationship between mobile phone and document use during business travel. In B. Brown, N. Green & R. Harper (Eds.), *Wireless world. Social and interactional aspects of the mobile age*. London: Springer-Verlag.
- Office for National Statistics (1997). *Social focus on families*. London: ONS.

- Office for National Statistics (2000). *Social trends 2000*. London: ONS.
- Perry, M., O'Hara, K., Sellen, A, Brown, B., & Harper, R (2001). "Dealing with Mobility: Understanding access anytime, anywhere," *ACM Transactions in Computer-Human Interaction*, Vol. 8, No. 4. ACM Press: New York., pp. 323-347.
- Plaisant, C, Druin, A., & Hutchinson, H. (2002). Technologies for families. *Proceedings of CHI 2002*, New York: ACM Press, 938-939.
- Puro, J. (2002). Finland: A mobile culture. In J. Katz & M. Aakhus (Eds.), *Perpetual Contact. Mobile Communication: Private Talk, Public Performance*. Cambridge: Cambridge University Press, 19-29.
- Reeves, R. (2002). Dad's army: The case for father friendly workplaces. *The Work Foundation*.
- Sellen, A.J., Louie, G., Harris, J. E., & Wilkins, A.J. (1997). What brings intentions to mind? An in situ study of prospective memory. *Memory*, Vol. 5, 4, 483-507.
- Sellen, A.J., Murphy, R. M., & Shaw, K. (2002). How knowledge workers use the Web. *Proceedings of CHI 2002*, Minneapolis, MN. New York: ACM Press.
- Sherry, J. (2001). Running and grimacing: The struggle for balance in mobile work. In B. Brown, N. Green & R. Harper (Eds.), *Wireless world. Social and interactional aspects of the mobile age*. London: Springer-Verlag, 108-120.
- Taylor A.S, & Harper, R. (forthcoming). *The gift of the gab?: A design oriented sociology of young people's use of "mobilZe"*. CSCW.
- Taylor, A. & Harper, R. (2002). Age old practices in the New World: A study of gift giving between teenage mobile phone users. *Proceedings of CHI 2002*. New York: ACM Press.
- Townsend, B. & O'Neil, K. (1990). American women get mad. *American Demographics*, August.
- Townsend, B. (2001). Dual-earner couples and long working hours: A structural and life course Perspective. *Berkeley Journal of Sociology*, 45, 161-179.
- UMTS Forum (Jan., 2003). *Social shaping of UMTS: Preparing the 3G Customer*. Commercial report available from www.UMTSforum.com.
- Venkatesh, A. (1996). Computers and other interactive technologies for the home. *Communications of the ACM*, 39, 12, 47-54.
- Whittaker, S. & Sidner, C. (1996). [Email overload: exploring personal information management of email](#). In *Proceedings of CHI'96 Conference on Computer Human Interaction*, NY: ACM Press, 276-283.