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The Internet and Other Uses of Time

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Abstract

The Internet represents a departure from previous communication technologies, combining features of interpersonal and mass communication. The "functional equivalence" argument in media studies predicts decreases in both types of communication activities as Internet use increases. A 1998–9 national sample of 948 individuals aged 18–64 who completed 24-hour time diaries of all daily activities is used to test this hypothesis.

Few differences in either interpersonal or mass communication activities are found across Internet users and non-users. Nor are there significant decreases in other free-time activities. As has been the case of television, certain personal care and other non-free time activities are most different. This raises questions about whether the Internet acts more to enhance communication behaviors rather than to displace behavior (which has been the case for television).

The Internet and Other Uses of Time

Modern IT has not arrived in a social vacuum, so it is instructive to see how the technologies that preceded it played a role in changing

communication and other behavior patterns. When television first appeared in the US, it significantly affected other mass media. Audiences abandoned their radio sets, movie theaters closed, and magazines that featured the type of content now prevalent on television (such as the light fiction in *Colliers* or the *Saturday Evening Post*) ceased publication. The general explanation offered for these effects was in terms of the *functional equivalence* of television content to alternative media outlets, in which television provided their functions (and maybe others) more efficiently for its audiences (Weiss, 1970).

When full-time diary data covering all daily activity became available in the 1965 Multinational Time-Budget Research Project, it was clear that television's apparent impact did show declines in the most functionally equivalent activities (Szalai, 1972). Thus, radio listening was about 60 percent lower, movie attendance 50 percent lower, and book and magazine reading 40 percent lower among television owners compared to non-owners (Robinson, 1972). Probably because of television's inability to provide newspaper-like content in its early stages (especially at the local, community level), it is important to note that newspaper reading was virtually the same among television owners and non-owners.

Of more direct sociological concern, however, was the difference in the social lives of individuals and families after acquiring a television: the out-of-home socializing of television owners (compared to non-owners) was lower by 34 percent and conversation in the home lower by 26 percent, with the combined average 1.6 hours per week of lower social life in these two activities being almost as large as the average 2.2 hour decline in other mass media use. Applying the functional equivalence argument, this suggests that television was performing some of the functions of social life.

Perhaps surprisingly, but notably, "other" free-time activities were not as significantly different between television owners and non-owners. That provides further support for the functional equivalence argument – that those displaced activities are the ones for which the technology offers a functionally equivalent alternative.

Arguing against the hypothesis, on the other hand, were the differences in time use that extended beyond these free-time activities. This is particularly the case for the personal care activity of sleep, which was on average 1.4 hours per week lower among television owners (Robinson, 1972). The extent to which viewers were in a sleep-like condition while watching could have been a factor here, along with the

sheer novelty that kept one up after bedtime – to this day, television is often equated with rest and relaxation, activities associated on the continuum from sleep to fully awake activity.

Even larger differences were found for *secondary* activities reported in the diaries: there was a 22-minute decline in secondary radio listening, offset by an almost equivalent *rise* in secondary television viewing. Television owners also spent 10–30 minutes less time alone, and 20 minutes more time with their spouses and children (thus perhaps inadvertently promoting a new form of family life, as described in Robinson, 1990). In line with the declines in socializing with friends and relatives, contact time with friends and neighbors was also lower for television owners. Equally impressive differences were found by location, with television owners spending more than half an hour more time at home indoors than non-owners, mainly at the expense of spending time in one's yard, in other people's homes, and on the streets. Television did bring people home, but indoors rather than outdoors.

While many of the activity differences in the 1965 study do not fit under the functional-equivalence umbrella, most of the changes predicted by it are found. Time spent on both personal and mass media activities were lower among television owners. The question, then, is whether the present data on the Internet will continue to show the same patterns of change.

Previous Studies of the Impact of the Internet

Speculation and publications on the impact of the Internet have tended to focus on social life, personal communication, and mass communication. Again, the content of communication in both types of channels can be seen to be equivalent, and more effectively or attractively conveyed by the Internet, so that we should expect to find the same sorts of changes as found for television. Specifically, we should find declines in both print and broadcast media usage among Internet users, along with declines in visiting and socializing both at home with one's family and in the homes of others.

Two widely publicized studies of early Internet impact reported results consistent with that hypothesis. Both Kraut et al. (1998) and Nie and Erbring (2000) suggest declines in some aspects of social life. Kraut et al. (1998), for example, found:

> Greater use of the Internet was associated with small, but statistically significant declines in social involvement as measured by communication within the family and the size of people's local social networks, and with increases in loneliness, a psychological state associated with social involvement. Greater use of the Internet was also associated with increases in depression. Other effects on the size of the distant social circle, social support, and stress did not reach standard significance levels but were consistently negative. (1998, p. 1017)

The samples used in both studies are quite different and each had its strengths and weaknesses. The Kraut et al. (1998) study followed a panel of 73 families (169 individuals) from eight neighborhoods of Pittsburgh, Pennsylvania, across a one- to two-year period. These longitudinal data were used to examine causal relationships, in this case causal relationships between "social involvement, and certain likely psychological consequences of social involvement."

The Nie–Erbring sample, on the other hand, was drawn from a national panel sample of approximately 4,113 respondents in 2,689 households. While exploring causal relationships is more difficult with these data since they come from only one point in time, they were not limited to any single geographic area and the sampling error, given the large sample size, is relatively small (±2.5 percent). These data, then allow greater generalization than the Kraut et al. data.

However, studies that have used a less ambitious set of questions and research designs have produced somewhat different results. For example, the Pew Center for Public Opinion Research has been conducting national surveys related to the public's use of IT since 1995, with periodic updates on certain questions on almost a monthly basis. Its most complete surveys were conducted in 1995 and 1998 with samples of more than 3,600 respondents. One value of the Pew data is that they asked intensive questions about media and social activity "yesterday" (as well as more generally), which allows respondents to report on a time period which is most recent in memory, as well as clearly defined in temporal terms.

Based on the 1995 Pew data, Robinson, Barth, and Kohut (1997) found that 1995 Internet and IT users were significantly *more* likely to use print media, radio newscasts, and movies than non-users, and not significantly less likely to be television viewers of either entertainment or news content. These results are robust, remaining after statistical controls for gender, age, education, income, race and marital status were introduced to the analyses.

Moreover, these results were largely replicated by Robinson and Kestnbaum's (1999) analysis of the 1997 SPPA national data, which asked about weekly computer use for hobbies or recreational uses, rather than about news media use. Again, the self-described general IT users were significantly more likely to read books and literature and to use the media for arts content, even after control for other factors. Users were also more likely to attend arts events, and to participate in a wide variety of other free-time activities, like attending sports events or movies, playing sports, and doing home improvements. They were no more likely to do gardening or to watch less television.

In their examination of the more recent 1998 Pew data, Robinson et al. (2000) showed that the proportion of Internet users had grown in the interim since 1995, and with somewhat different results. Print media use, while still greater, was no longer significantly greater among Internet users. Television use was lower among users, but it was not significantly lower after introducing multivariate controls.

Overall, then, these analyses provide little support for time displacement following the functional equivalence argument and the earlier results for television.

These re-analyses of large national survey data, then, provide little support for Internet users being any less active in their usage of other news or entertainment media, or for their being less social either in their behavior or their attitudes toward others. However, these results are based on single-time surveys that have limited capacity to identify causal processes or to monitor dynamic relations between IT use and other activity, as the Kraut et al. study did.

Data, Measures, and Methods

The time-use evidence in the present chapter is based on a comprehensive set of diary data on how people spend their time, as reported by a 1998–9 national probability survey of 948 respondents aged 18 to 64 in the form of 24-hour recalled time diaries. These diary data, which have been collected on irregular bases in more than twenty western countries since 1965 (with some measurements extending back to the 1920s) provide unique insights into how daily life is structured and has been changing (Robinson and Godbey, 1999).

In these diary accounts, cross-section samples of the public (such as in 1998–9) provide complete accounts of what they do on a particular day – and for the full 24 hours of that day. Respondents in these

surveys take the analyst step-by-step through their day, by describing when they went to bed, when they got up and started a new day, and all the things they did throughout the day until midnight of that day. In the 1998–9 accounts, the people also reveal where they spent their day, who they were with, and the other activities they were doing. Because they represent complete accounts of daily activity, diary data collected from cross-section samples allow one to generate estimates of how much time is spent on the complete range of human behavior – from work to free time, from travel to time spent at home.

Target respondents in this national random digit dial survey were selected using the "next birthday" method between March 1998 and March 1999, with all days of the week and all seasons of the year equivalently covered. All sampled numbers were called at least twenty times. Respondents who refused were recontacted by specialized interviewers, who obtained conversion for about a fifth of such respondents. Overall, 56 percent of eligible respondents completed a diary account of their previous day's activities. The data were weighted to 1998 Census Bureau distributions on gender, age, race, education and region and to adjust for the small differences by day of the week. For each activity in the diary, the respondent reported the start and end time, a description of the activity, the secondary activity, the location of the activity and the persons present during the activity. Further details of the diary method used are shown in appendix 8.1.

New activity codes 56 (Internet use), 57 (computer games) and 58 (other computer use) were developed for this study and, like other activities, coded in minutes per day. They were then converted into hours per week after weighting the data to ensure that all days of the week were equally represented. Thus, the sampling units involved are in terms of person-days rather than persons, since the latter were only interviewed about a single day. The data are weighted by demographic variables to match 1998 US Census Bureau characteristics (for example, gender, age, education, income, and employment status).

Multivariate controls for demographic differences were introduced by using Multiple Classification Analysis or MCA (Andrews, Morgan, and Sonquist, 1973). MCA is a multiple regression based statistical technique implemented in SPSS that provides differences in categorical predictor variables that make the statistical effects of other predictors equal. Its value in the present analysis is that it allows one to show comparable differences across different categories of each independent measure.

Internet/IT use, the major independent measure, was operationalized in two different ways to capture both single-day and longer-term use. First, a single-day ("yesterday") measure was developed from the time diary, defined by whether respondents explicitly mentioned Internet or IT usage as either a primary or secondary activity in the diary for the previous day. The longer-term (general) measure was developed from responses to a questionnaire item asking how many hours a week they generally used the Internet. While 39 percent (of the 984) respondents said they used the Internet during a typical week, only 8 percent reported such usage "yesterday" in the diary.

Results

Comparison of the daily diary activities of Internet users vs. non-users is shown in table 8.1 for the yesterday IT users ($n = 77$) and in table 8.2 for general Internet users ($n = 381$). Even though the time-diaries are only for a single day, data are shown in extrapolated weekly hours that add to 168 hours per week to aid in interpretation. Statistically significant bivariate differences ($\alpha < 0.05$) were then subjected to MCA adjustment for the demographic control factors and these results are shown in the final columns of tables 8.1 and 8.2.

Turning first to comparisons for free-time activities in table 8.1, it can be seen that, consistent with earlier Internet studies, "yesterday" Internet users reported reading more than non-users (books, magazines, and newspapers). While their television viewing is lower, it is not significantly lower. "Yesterday" Internet users socialize and visit with people outside the home for two hours less than non-users on average; however, their conversation inside the home (with family and by phone) is an hour greater on average. After MCA adjustment, neither difference is statistically significant, thus not supporting the functional equivalence argument.

What differences are found? To which activities do Internet users devote less time to offset the average of 10.8 hours they spend on the Internet? Once that nearly 11 hours of weekly extrapolated Internet use is taken into account, it can be seen that the total amount of *free time* is about 8 hours greater for Internet users than non-users. Moreover, there are hardly any differences in specific activities like religion, organizations, fitness activity, and hobbies. None are statistically significant, except for the greater amount of time Internet users spend attending events.

Table 8.1 Differences between IT users and non-users on a "yesterday" basis (hours per week)[a]

Non-free time activities	Non-IT (n = 852)	IT (n = 77)	IT difference	After MCA adjustment[b]
Work	29.9	31.4	1.5	
Commute	3.6	4.4	0.8	
Total work	33.5	35.8	2.3	
Housework	13.0	10.0	−3.0	−1.0[c]
Childcare	5.4	3.6	−1.8	
Shopping	6.3	4.7	−1.6	
Total family care	24.7	18.3	−6.4	−3.0[c]
Eat	7.7	7.3	−0.4	
Sleep	56.0	53.0	−3.0	−2.2[c]
Personal grooming	9.7	8.3	−1.4	
Total personal care	73.4	68.6	−4.8	−3.4[c]
Education	1.6	4.1	2.5	−1.1[c]
Total non-free time	133.2	126.8	−6.4	−7.0[c]

Free time activities	Non-IT (n = 852)	IT (n = 77)	IT difference	After MCA adjustment[b]
Religion	0.8	1.4	0.6	
Organizations	1.0	0.9	−0.1	
Attend events	1.2	1.4	0.2	
Social/visit	5.6	3.4	−2.2	
Fitness	2.5	2.6	0.1	
Hobby	1.9	1.6	−0.3	
Television	12.2	10.4	−1.8	
Read	2.1	2.4	0.3	
Stereo	0.2	0.0	−0.2	
Conversation	5.7	6.4	0.7	
Computer/Internet	0.0	10.8	10.8	10.0[c]
Other	1.6	0.4	−1.2	
Total free time	34.8	41.7	6.9	7.0[c]
Total time	168.0	168.0	0	
Total travel	11.6	10.3	−1.3	

[a] Defined as use of IT on the diary day. [b] Controls for gender, age, education, employment status, and marital status. [c] Indicates the difference is statistically significant, p < 0.05.

Table 8.2 Differences between Internet users and non-users on a "general" basis (hours per week)[a]

Non-free time activities	Non-Internet (n = 552)	Internet (n = 381)	Internet difference	After MCA adjustment[b]
Work	30.2	33.2	3.0	
Commute	3.3	4.2	0.9[c]	0.5
Total work	33.5	37.4	3.9[c]	2.1
Housework	13.7	11.3	−2.4[c]	−0.5
Childcare	5.6	4.7	−0.9	
Shopping	6.3	5.7	−0.6	
Total family care	25.6	21.7	−3.9[c]	−1.3
Eat	7.2	8.2	1.0[c]	0.8[c]
Sleep	57.0	53.8	−3.2[c]	−3.0[c]
Personal grooming	9.4	9.7	0.3	
Total personal care	73.6	71.7	−1.9	
Education	1.0	3.2	2.2[c]	1.5
Total non-free time	133.7	134.0	0.3	

Free time activities	Non-Internet (n = 552)	Internet (n = 381)	Internet difference	After MCA adjustment[b]
Religion	0.9	0.7	−0.2	
Organizations	1.1	0.9	−0.2	
Attend events	0.7	2.0	1.3	0.9[c]
Social/visit	5.6	5.2	−0.4	
Fitness	2.3	2.9	0.6	
Hobbies	2.2	1.4	−0.8	−1.0[c]
Television	13.4	10.0	−3.4	−2.3[c]
Read	1.7	2.7	1.0	1.0[c]
Stereo	0.2	0.2	0.0	
Conversation	5.5	4.9	−0.6	
Computer/Internet	0.4	3.2	2.8	2.6[c]
Other	0.3	0.0	−0.3	
Total free time	34.3	34.1	−0.2	
Total time	168.0	168.1	0.0	
Total travel	10.9	12.3	1.4	0.5

[a] Defined as an Internet user by self-report. [b] Controls for gender, age, education, employment status, and marital status. [c] Significant at $p < 0.05$ level.

Within *non-free-time* activities, the situation is reversed with "yes-terday" Internet users spending about 8 hours on average less than non-Internet users on such necessary activities. Which of the non-free activities differ? First, the paid work hours of Internet users and non-users are basically the same. The groups do differ, however, in the amount of time spent on family care and personal care activities, with Internet users spending less time on both of them. In the case of family care, the largest difference is found for core housework activities, like cleaning and cooking, which is the only difference that is statistically significantly lower for Internet users. Nonetheless, childcare and shop-ping are both almost two hours lower among Internet users as well. That adds to almost seven hours weekly less overall family care. After MCA adjustment for family and other demographic background factors, however, that figure declines to three hours and is not statis-tically significant.

In the case of total personal care, Internet users spend about 5 hours less time per week than non-users. The biggest difference is the three hours less sleep reported by Internet users and this difference is still significant after MCA adjustment. Parallels to earlier results with tele-vision are thus apparent, with certain family and personal care activ-ities being lower among Internet users.

Similar patterns are found in the comparisons of longer-term "general" Internet users and non-users shown in table 8.2. Perhaps because of the larger sample qualifying as users in this table, more comparisons are found to be statistically significant. Turning first to the mass media, it can be seen that the number of hours of reading is actually *higher* among Internet users and here significantly so. The three-plus hours lower average television viewing, drops to approxi-mately two hours less after MCA adjustment, and that difference is also significant. However, when reading and television are combined, the overall media differences are less than an hour a week.

In terms of social life, both in-home and away socializing are lower for "general" Internet users, but by less than an hour a week – hardly evidence of a serious decline in social life. Differences in religious, organizational, and fitness activity are not significant. However, "general" Internet users spent almost three times more time attending social events. In contrast to table 8.1, the total free time hours of users and non-users are identical, even taking the greater IT use of Internet users into account.

In terms of *non-free* activities, the work hour differences between longer-term general users and non-users are again not statistically sig-

nificant. Internet users again report less housework/family care and less sleep. As in table 8.1, the housework hour differences are not statistically significant after MCA adjustment. However, the three hours less sleep of Internet users here *is* statistically significant after MCA control, and is about the same magnitude and direction as shown in table 8.1.

In terms of overall mobility, "general" Internet users (long-term) spend more time traveling, but not significantly so. In, table 8.1 "yesterday" users also reported less travel.

Secondary activities

The diary method also records multi-tasking or "secondary" activities, activities that are done to the accompaniment of primary activities – such as watching television or talking while having a meal. Table 8.3 shows the six main secondary activities reported in the diaries, along with the total minutes of secondary activity (i.e., for these six as well as for all other secondary activities). Separate differences are shown for "yesterday" users on the left side of table 8.3 and for "general" users on the right side.

It can be seen that by far the most commonly reported secondary activity in table 8.3 is conversation – more than 5 hours per day on average. On the left-hand side of table 8.3, "yesterday" IT users reported talking only slightly more if examined on the basis of the daily diary. However, on the right-hand side, "general" Internet users reported significantly more conversation than non-users, a difference that was actually *larger* after MCA adjustment.

The next most frequent secondary activity was listening to radio, and here again, Internet users listened more than non-users. This difference was statistically significant after MCA adjustment for "general" users; but the reported difference was only slightly higher for "yesterday" users. For the other two secondary media activities – television and reading – there were no statistically significant differences either for "yesterday" or "general" users. Nor was there a significant difference for secondary activity childcare. On the final secondary activity, eating meals and snacks, the significantly greater meal time of ("general") Internet users was reduced and not statistically significant after MCA adjustment, much as was found for "yesterday" users.

Table 8.3 Internet usage differences in secondary activities, social company, and location (hours per week)

	Daily				General Internet			
	Non-IT users (n = 842)	IT users (n = 77)	Differences	MCA Adj.	Non-Internet (n = 522)	Internet users (n = 371)	Differences	MCA Adj.
Secondary activities								
Conversation	35.5	35.9	0.4		34.0	37.8	3.8[a]	4.2[a]
Radio	10.2	10.5	0.3		9.2	11.7	2.5[a]	2.0[a]
TV	5.4	5.8	0.4		5.7	4.8	−0.9	
Reading	2.2	2.2	0.0		2.1	2.6	0.5	
Child Care	2.2	2.7	0.5		2.5	2.1	−0.4	
Eating	5.7	6.0	0.3		5.0	6.8	1.8[a]	−0.9
Total (all)	61.2	63.1	1.9		58.5	65.7	7.2[a]	8.8[a]
Social company								
Time alone (while awake)	37.9	42.7	4.8		37.3	39.9	2.6	
Spouse	15.7	15.0	−0.7		15.2	16.4	1.2	
Children	18.3	11.0	−7.3[a]	−3.4	19.4	15.1	−4.3[a]	−1.3
Co-workers	21.8	24.0	2.2[a]	−1.5	8.5	12.8	4.3[a]	4.0[a]
Friends	9.8	9.2	−0.6		8.8	11.3	2.5[a]	0.3
Relatives	7.6	8.1	0.5		8.6	6.2	−2.4[a]	−1.2
Other	3.7	5.5	1.8		3.6	4.4	0.8	
Location								
At home	104.2	107.9	3.7		107.1	100.1	−7	4.2
Others' home	7.6	4.4	−3.2		7.2	7.5	0.3	

[a] Significant at $p < 0.05$ level.

The final entry in the first part of table 8.3 is for *all* secondary activities, that is, for the six activities just reviewed plus all other secondary activities. It can be seen that the overall multi-tasking time spent is greater for ("general") Internet users, and it is statistically significant after MCA adjustment. It is also statistically significant if all secondary activity except conversations is tabulated separately (not shown). While the differences are not as large for "yesterday" users, they are in the same direction. This suggests that Internet users are more involved in multi-tasking in general, perhaps a reflection of their busier lifestyles.

The second set of entries in table 8.3 shows time spent with different social partners. The first entry is for time spent alone while awake (thus excluding time spent at sleep). "Yesterday" Internet users reported spending about one-half hour more weekly time alone on average, on the diary day (not statistically significant before or after MCA adjustment). Moreover, "general" Internet users also spent about 3.8 hours more weekly time alone, a difference that is statistically significant.

Time spent with one's spouse and children is also lower, but again, not significantly so after MCA control for such factors as marital status and presence of children are introduced. Time spent with co-workers and with friends tends to be higher for "general" Internet users, although neither difference is statistically significant after MCA adjustment. There are no differences for time spent with others. In contrast, time with relatives is lower (for "general" users), but not after the introduction of statistical controls.

In general, then, despite their 20 to 40 minutes more time alone, there are few statistically significant "social contact" differences between Internet users and non-users after MCA adjustment. Part of this greater time alone may be due to their lower sleep time. Thus, there is no consistent evidence in these data that Internet users have impoverished social contacts relative to people who do not use the Internet. The slightly lower average times with children and relatives are offset by slightly greater average times with co-workers and friends.

The third and final set of entries in table 8.3 describe the average *total* time that the respondents spent at home and in others' homes. While "yesterday" Internet users spend more time at their own home and about one-half hour less time in others' homes, these differences are not significant. Moreover, the pattern is reversed when looking at the "general" Internet users. Thus again, no consistent patterns emerge from these results.

Summary

In this analysis of recent differences between the daily activities of IT users and non-users, little clear evidence of a pattern consistent with functional equivalence was found to parallel the 1965 comparisons between owners and non-owners of television. There was no evidence of IT users either making less use of the printed media or listening less to the radio. Indeed, if anything they made more use of these traditional media. There was evidence of less television usage, but this did not hold up in certain multivariate comparisons, nor for viewing as a secondary activity.

Nor did the other ways of using free time consistently and statistically differ across samples (for example, there was greater attendance at entertainment and cultural events). Internet users did not spend notably less time in social contact, and they were slightly more active in family or home communication and home phone calls. Overall, Internet users spent more time in conversation, significantly more in the context of general long-term Internet activity.

More consistent differences, surprisingly, were found for non-free time activities, like lower family care and personal care times among IT users. While some of these differences disappeared or were reduced significantly after adjustment for demographic predictors, some notable ones remained after these adjustments. In particular, the lower average sleep times of IT users is a robust finding. This would seem to be a difference not easily captured in terms of the functional equivalence argument.

The more active lifestyles of IT users are further suggested by their higher reporting of all secondary activities, and by their higher reports of social contacts with friends and co-workers. At the same time, IT users reported somewhat more time alone and less time with their children – but more time with friends and co-workers.

In terms of the historical and theoretical issues raised at the outset of this article, then, IT in its initial stages seems to depart from the massive displacement effects found with television and perhaps earlier media. Outside of displacing modest amounts of television or sleep time, Internet use seems more a "time enhancer"; people do not seem to be forced to give up other activities to accommodate it. Indeed, it may function like many home appliances and especially like the telephone in allowing one to be more productive in use of time, using print media for affirming information, or enriching old social networks with new or newly resurrected social contacts. Such differences,

of course, could easily change as people increasingly accommodate to new technologies.

Appendix 8.1 Features of the Time Diary and a Sample Diary

The measurement logic behind the time diary approach follows from that employed in the most extensive and well known of diary studies – the Multinational Time Budget Study of Szalai et al. (1972). In that study, roughly 2,000 respondents from each of twelve different countries kept a diary account of a single day. The same diary procedures and activity codes were employed in each country in 1965. Respondents were chosen in such a way that each day of the week was equally represented (although only in the fall and spring seasons). In subsequent studies, all seasons of the year were represented.

Table A8.1 shows the diary filled out by one (non-Internet) respondent in the study. This respondent was watching television at midnight as the new day began and that she went to pick up her daughter between 12:15 and 12:30 a.m. She then got ready for bed and got to sleep at 12:50. She then woke up to make breakfast and lunches for her son and husband from 4 to 4:30 a.m. She then got ready for work and left at 4:55 a.m., arriving at 5:00 a.m. She took a work break at 8:00 for fifteen minutes with a friend who worked nearby. She returned to work and took fifteen minutes to eat lunch and then continued to work until 1:30 p.m., at which time she drove home, arriving home at 1:35. Here, she visited with a neighbor in the back yard for twenty-five minutes, before doing a marathon three and one-half hour house clean. She then went out to pick up her daughter from school, returning home to serve and eat supper until 8:00 p.m. and spent the next hour washing dishes and doing laundry. She watched television for seventy-five minutes and then went out to pick up her daughter from work. Returning at 10:30 p.m. she got ready for bed and was asleep by 10:45 p.m.

The task of keeping the diary may have some recall difficulties, but it is fundamentally different from that of making time estimates. The diary keeper's task is to recall all of the day's activities in sequence. This is likely to be similar to the way the day was structured chronologically for the respondent and to the way most people store their activities in memory. Rather than having to consider a long time period, the respondent need only focus attention on a single day

Table A8.1 Sample of completed time diary: female, cook, age 40, married with two children, Friday

What did you do?	Time began	Time ended	Where?	With whom?	Doing anything else?	Coded Prim'Sec'Min'With'Loc
Watch TV	12:00	12:15	Home	—	No	91'00'015'00'0
Went after daughter at work	12:15	12:30	Transit	Daughter	No	49'00'015'30'4
Got ready for bed	12:30	12:50	Home	—	No	40'00'020'00'0
Sleep	12:50	4:00	Home	—	No	45'00'190'00'0
Got up, made lunches for husband and son and also breakfast	4:00	4:43	Home	—	No	10'00'030'00'0
Got ready for work	4:30	4:55	Transit	—	No	40'00'025'00'0
Left for work (car)	4:55	5:00	Transit	—	No	09'00'005'00'4
Work	5:00	8:00	Restaurant	Employees	No	00'00'225'50'1
Coffee break	8:00	8:15	Restaurant	Friend	Talked	08'96'015'50'1
Work	8:15	12:00	Restaurant	Employees	No	01'00'225'50'1
Ate lunch	12:00	12:15	Restaurant	Employees	Talked	06'96'015'50'1
Work	12:15	1:30	Restaurant	Employees	No	00'00'075'50'1
Off work, drove home	1:30	1:35	Transit	—	No	09'00'005'00'4
Visited with neighbor	1:35	2:00	Yard	Neighbor	Talked	75'96'025'77'02
Cleaned house	2:00	5:15	Home	—	No	12'90'195'00'0
Went after daughter at school	5:15	5:45	Transit	Daughter	No	12'90'195'00'0
Took shower	5:45	6:00	Home	—	No	40'00'015'00'0
Made supper	6:00	6:25	Home	—	No	10'00'015'12'0
Ate supper	7:15	8:00	Home	Family	Talked	11'96'030'20'0
Did dishes	8:00	8:30	Home	Daughter	Talked	11'96'030'20'0
Washed clothes	8:30	9:00	Home	—	No	14'00'030'00'0
Sat down and watched TV	9:00	10:15	Home	Family	No	91'00'075'12'0
Went after daughter at work	10:15	10:30	Transit	Daughter	No	29'00'015'30'4
Got ready for bed	10:30	10:45	Home	—	No	40'00'015'00'0
Went to bed, sleep	10:45	12:00	Home	—	No	45'00'075'00'0

Table A8.2   Basic two-digit activity code

00–59 Non-free time

00–09 Paid work
00 (Not Used)
01 Main job
02 Unemployment
03 Work travel
04 (Not used)
05 Second job
06 (Not used)
07 (Not used)
08 Breaks
09 Travel to/from work

10–19 Household work
10 Food preparation
11 Meal cleanup
12 Cleaning house
13 Outdoor cleaning
14 Clothes care
15 Car repair
16 Other repair
17 Plant/garden care
18 Pet care
19 Other household

20–29 Childcare
20 Baby care
21 Child care
22 Helping/teaching
23 Talking/reading
24 Indoor playing
25 Outdoor playing
26 Medical care-child
27 Other child care
28 Dry clean
29 Travel/child care

30–39 Obtaining goods/ services
30 Everyday shopping
31 Durable/house shop
32 Personal services
33 Medical appointments
34 Govt./financial services
35 Repair services
36 Other services
37 Other shopping
38 Errands
39 Travel/goods, services

40–49 Personal needs and care
40 Washing, hygiene, etc.
41 Medical care
42 Help and care
43 Eating
44 Personal care
45 Night sleep
46 (Not used)
47 Dressing
48 NA activities
49 Travel/personal care

50–59 Educational
50 Attend classes
51 Other classes
52 (Not used)
53 (Not used)
54 Homework
59 Travel/education

55–99 Free time

55–58 IT/library
55 Using library
56 Using the Internet
57 Playing games on a PC
58 Other PC use

60–69 Organizational
60 Professional/union
61 Special interest
62 Political/civic
63 Volunteer helping
64 Religious groups
65 Religious practice
66 Fraternal
67 Child/youth/family
68 Other organizations
69 Travel/organizational

70–79 Entertainment/ social
70 Sports events
71 Entertainment
72 Movies
73 Theater
74 Museums
75 Visiting
76 Parties
77 Bars/lounges
78 Other social
79 Travel/social

80–89 Recreation
80 Active sports
81 Outdoor
82 Exercise
83 Hobbies
84 Domestic crafts
85 Art
86 Music/drama/dance
87 Games
88 Computer use games
89 Travel/recreation

90–99 Communications
90 Radio
91 Television
92 Records/tapes
93 Read Books
94 Magazines/etc.
95 Reading newspaper
96 Conversations
97 Writing
98 Think/relax
99 Travel/communication

(yesterday). Rather than working from some list of activities whose meanings vary from respondent to respondent, the diary keepers simply report their day's activities in their own words.

Automatic procedures were built into the diary recording procedures that are now conducted by Computer Assisted Telephone Interviewing (CATI) to ensure accurate reporting. Whenever respondents report consecutive activities that involve different locations, they are reminded that there needs to be some travel episode to connect them. Activity periods that last more than two hours automatically involve the probe, "Were you doing anything else during that time, or were you (activity) for the entire time?" As is apparent in table A8.1, all periods across the day must be accounted for in order that the diary account total to 1,440 minutes (or 24 hours).

As in earlier diary surveys, these largely open-ended diary reports are then coded using the basic activity-coding scheme developed for the 1965 Multinational Time Budget Research Project (as described in Szalai, 1972). As shown in outline form in table A8.2, the Szalai code first divides activities into non-free time activities (codes 00–54, 59) and free time activities (codes 55–8, 60–99); non-free activities are further subdivided into paid work, family care and personal care, and free time activities are further subdivided under the five general headings of computer usage, organizational activity, social life, recreation and communication. This division refers to the *usual* nature of different activities, even though *all* social life or media use may not be freely chosen by the individual, or that *no* work or housework has a leisurely component.

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