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RESEARCH ARTICLE

Increasing the effectiveness of time-use survey with qualitative methods: The analysis of time–space interaction[1]

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Time-use surveys have been rich data sources in many countries for a long time. Turkey was among the countries that realized the potential of time-use surveys quite late and completed the first national survey in 2006. Despite its importance for a wide range of issues and applications, the first survey has flaws in design, which reduce its effectiveness and reliability. This is mostly due to disregarding cultural factors while tracking the methodology of European examples. This study aims to propose more appropriate methods of gathering time-use data in the Turkish context through a field survey in Ankara, the capital city. A mixed methodology that combines quantitative and qualitative methods effectively was applied and used to enrich data. The influence of space use was stressed and leisure activities were utilized to exemplify the use and benefits of mixed methods.

Keywords: mixed methodology; time-use survey; time–space interaction; Turkish time-use

Introduction

Time-use surveys usually involve a combination of qualitative and quantitative methods at different steps of the research process. This study focuses on ways to increase the effectiveness of time-use surveys through the use of methodological triangulation. It proposes the use of qualitative and quantitative methods as sequences by emphasizing the importance of qualitative methods.

To exemplify the potential use of methodological triangulation within the framework of time-use surveys, a field survey was conducted in Ankara, the capital city of Turkey. The main aim of the survey is the analysis of potential problems and issues that emerged during the first national time-use survey of Turkey. In our study, special emphasis is given to one of the most ignored components of time-use studies: space use other than geographical location (see Erkip and Mugan 2008 for details).

In this respect, in this paper, first the process of combination of multiple methods is briefly discussed. The roles of multiple methods in strengthening research, the process of methodological triangulation and how qualitative and quantitative methods work as facilitators of each other are described. Then, the potential use of methodological triangulation in time-use surveys within the Turkish context is discussed with the help of the field survey. Space is one of the important qualitative

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determinants of time-use and we claim that it has been ignored in most time-use surveys. Thus, it is a particular area of concern for this study while testing alternative methods concerning time-use.

The combination of multiple research methods

Krathwohl (1998, p. 619) states that "many problems require more than any one method can deliver; the answer, of course, is a multiple method approach". According to Morse (2003, p. 196) "multiple methods are used in a research program when a series of projects are interrelated within a broad topic and designed to solve an overall research problem". Tashakkori and Teddlie (1998, 2003a, 2003b) name this multiple method approach "mixed model studies" and claim that these studies "combine the qualitative and quantitative approaches within different phases of the research process" (Tashakkori and Teddlie 1998, p. 19). According to these authors:

- Mixed method research can answer research questions that the other methods cannot.
- Mixed methods research provides better (stronger) inferences.
- Mixed method research provides the opportunity for presenting a greater diversity of views (Tashakkori and Teddlie 2003b, p. 674).

As Krathwohl (1998) points out, the combination of multiple research methods through employing a hybrid with different aspects of each has a significant role in strengthening a study and compensating for limitations and faults that may result from choosing one method over the others. Data generated by qualitative and quantitative methods that are used in the same research are means of enhancing the validity of the results. The process of "triangulation" helps to provide consistency of evidence (i.e. validity) (Brannen 1992, Krathwohl 1998).

Triangulation is an older and more widely used term referring to the use of multiple research methods (Brannen 1992). Triangulation means combining qualitative and quantitative methods to demonstrate convergence in results. In addition, the combination of methods in a single study aims to use methods sequentially, to find contradictions and fresh perspectives and to add breadth to a study (Creswell 1994).

Referring to Denzin (1970), developer of the strategy of triangulation, many researchers list four types of triangulation: method triangulation, data triangulation, investigator triangulation and theory triangulation (see Brannen 1992, Creswell 1994, Krathwohl 1998, Tashakkori and Teddlie 1998, 2003a). Among these methods, data triangulation is what we have proposed to be useful to enhance time-use surveys. Data triangulation refers to the use of multiple sources of data across time, space and persons (Krathwohl 1998, Tashakkori and Teddlie 1998). It involves different data sets derived through different methods and through the use of the same method at different times or with different persons (Brannen 1992). In other words, data can be collected from various respondents, at different points in time, in a variety of contexts.

While optimally attacking a research problem to obtain information, qualitative and quantitative methods analyzing different views of the same world work as facilitators of each other (Brannen 1992, Krathwohl 1998). According to Creswell

(1994), in order to have a better understanding of the concept being tested or explored, it is advantageous to combine methods and to integrate the paradigms at several phases of the research process. Time-use surveys can be given as examples of how combination of qualitative and quantitative methods can work effectively at different steps of the research process. In the following section, methodological triangulation within the scope of time-use surveys is discussed.

Methodological triangulation in time-use surveys

In many cases, the optimal condition required for the powerful development of evidence and explanation that will attain a consensus around the interpretation of the data can be provided only by the use of multiple methods (Krathwohl 1998). The application of time-use studies brings together the use of multiple methodological perspectives in their structure. Time-use surveys that have been carried out in many countries combine various qualitative and quantitative methodological perspectives in data collection, sampling procedures, coding and analysis of data (see Erkip and Mugan 2008, Haraldsen 1999, 2000, Schulz and Grunow 2006 for the details of how different methods can intervene at different steps of the research process of time-use surveys).

As indicated by Guerrero (2000, p. 4) "time-use data are usually generated from time-use surveys by recording the activities and measuring the time spent on them by individuals". According to her, activity and time are basic building-blocks of time-use data and this data "paints a quantitative picture of who does what (and what else simultaneously) during the day, for how long, how often, at what time, in what order, where, with whom, and for whom" (p. 4).

Time-use data can be collected by means of stylized estimate methods, observational methods, administrative records, questionnaires, interviews and diary methods (Guerrero 2000, Haraldsen 2000). Although there is an ongoing debate on which data collection is the most appropriate concerning time-use data, time diaries seem to be the most common way of collecting this kind of records (see Bonke 2005, Budlender and Mpetsheni 1999, Haraldsen 1999, 2000, Kan 2006, Kitterod and Lyngstad 2005, Schulz and Grunow 2006 for the comparisons of different time-use data collection methods). Data collected through time diaries are usually analyzed with complex statistical procedures and used mostly as quantitative indicators.

Much time-use research investigates how the data collected through time-use diaries can be enhanced and enriched (see Michelson 2006, Vaisanen 2006, Fisher 2006). According to them, quantitative data in diaries such as the average number of activities, the number of secondary activities, the order of activities, etc., are helpful indicators that can give clues about whether the diaries are filled up to give healthy results. On the other hand, some other research indicates the necessity of the use of alternative methods in order to enhance and strengthen the data collected through diaries and this brings out the issue of methodological triangulation within time-use surveys (see for example, Haraldsen 1999, 2000, Kan 2006, Schulz and Grunow 2006). According to this research, diaries should be accompanied by questionnaires (regarding household structure and members), observations and/or pictograms (Haraldsen 1999, 2000, Schulz and Grunow 2006). For the sampling procedure of time-use diaries, depending on the expected representativeness of the sample along with the reference population and the scale of the study, either quantitative (e.g. stratified and cluster sampling) or qualitative sampling methods (e.g. quota

sampling, purposive or convenience sampling) can be applied. These flexible and mixed methods of data collection and sampling are, however, associated with a quite complex statistical procedure of data interpretation and analyses especially for large-scale studies that end up with summaries in statistical tables through complex coding processes (see Bonke 2005, Budlender and Mpetsheni 1999, Kan 2006, Kitterod and Lyngstad 2005, Michelson 2006, Schulz and Grunow 2006 for the use of different sampling and statistical methods in time-use). Within this respect, it can be argued that time-use surveys in general are appropriate to demonstrate the benefits of methodological triangulation. However, we believe that it is also necessary to consider the quality of data in time-use surveys in the context of particular countries, especially developing countries. Turkey seems to be one of those countries in which more reliable methods of data collection can be utilized to improve the quality of data.

The time-use survey in the Turkish cultural context

Although time-use surveys have long been applied in many countries, Turkey is amongst the countries that realized this potential quite late and little research utilizing time-use data has been done until recently. These were mainly case studies in the field of economics (see Erdil *et al.* 2006, Kasnakoglu and Dayioglu 2002, Kasnakoglu *et al.* 1996 for the details of this research). After a pilot study in 1996, the Turkish Statistical Institute (TURKSTAT) initiated the first national time-use survey in December 2005 and completed the survey by the end of 2006. The Turkish time-use survey was designed to be a part of the Harmonized European Time Use Study (HETUS) and utilized EUROSTAT (2000a, 2000b) activity classifications and coding as its basis. The design specifications reflected the effort to obtain comparable data to European countries. It consisted of a 24 hour diary with follow-up interviews with 5070 households. The sampling method was quantitative stratified multi-stage sampling. Survey data was intended to be evaluated using a complex statistical analysis. The major characteristics of the first national survey can be seen in Table 1. Table 2 shows the details of the survey methodology.

It is natural that European standards are observed in the first application to obtain comparable data with European countries. For that reason, EUROSTAT (2000a) activity lists and coding system were used in the Turkish survey and HETUS (EUROSTAT 2000b) guidelines were taken into consideration. Although it appeared to be a mature application, there were contextual problems in the design and the application of first national time-use survey of Turkey. Two pilot studies – in 1996 and 2005 – indicated that a time-diary approach is not appropriate for obtaining accurate results due to the different development and literacy levels in different regions of Turkey. This indicated the need to use alternative methods (see Budlender and Mpetsheni, 1999, Haraldsen 1999 for the investigation of alternative methods, particularly for less developed and developing countries).

TURKSTAT studies demonstrated that there was a lack of information on secondary activities (O. Sarica and M. Karakas, personal communication, March–July 2006). It was also questionable if 10 minute intervals were appropriate for activity recording for the average Turkish citizen. Local perception of time in different regions of Turkey should be taken into consideration (see Budlender and Mpetsheni 1999, Whiteford and Barns 1999 as examples for the cases of South Africa and New Zealand, respectively). Especially in rural areas of Turkey, the

Table 1. Design specifications of time-use survey in Turkey (2006).[a]

Title of survey	2006 Time-Use Survey
Reference period	1 December 2005 to 31 December 2006. 13 months
Source	Turkish Statistical Institute (TURKSTAT)
Survey design	Independent Survey
Survey objectives	● To measure the daily activity patterns of Turkish people; ● to identify differences in time-use patterns of different gender, age and socio-economic group; ● to collect data that improve GNDP estimates; ● to collect data that make international comparisons on time-use possible
Method of data collection	Self-completed 24 h diary with 10 min intervals
Survey instrument	
Description	Full time-diary and household questionnaire
Recording of simultaneous activities	One secondary activity
Context variables collected (for what purpose, for whom, with whom, location, paid/unpaid etc.)	For whom, with whom, location, transport mode
Activity classification	Adaptation of EUROSTAT activity classifications
Time sample	Covers 13 months, continuous on a weekly basis; household members provide data for specified two days – one weekday, one weekend; all members of the household keep their diary on the same day, all days of the week surveyed in equal proportions, postponement of diary days is allowed for a maximum of two weeks
Sample selection	
Reference population	National, household population (excluding people living in institutions, i.e. hospitals, military barracks, jails, elderly homes), all household members aged 15 years or over
Sampling procedure	All eligible households, urban and rural (5070 households; 3380 urban, 1690 rural)
Response rate	Above 80%[b]

Source: Erkip (2006).
[a]Annex 2 of the UN Guide to Producing Statistics on Time-Use (2005) is used as the format.
[b]TURKSTAT, unofficial information.

illiteracy rate is high. Therefore, it is unrealistic to expect people fill in the time diary correctly. Better option might be a recall interview for such people (UN 2005). Although interviewers checked time diaries in follow-up interviews, there occurred problems in recording simultaneous and secondary activities. There were also cases in which activity sequence was not logical or was missing. Another important issue was the local dialects that led to some communication problems between household members and interviewers (for example, "taking a bath" is an activity that has different names in various regions of Turkey; O. Sarica and M. Karakas, personal communication, March–July 2006).

The response rate was high – above 80% – according to the officials, yet it might not reflect a voluntary participation in the Turkish context. This may be an indication of fear of the state authorities in some cases and from being punished by

Table 2. Framework of the Turkish time-use survey.

Type of household survey	Independent and stand-alone
Survey instrument	24 h diary (two specified days) with follow-up interviews
Sampling method	Stratified multi-stage sampling
Coding procedure	On-site, web-based coding
Geographical coverage	Urban and rural areas of Turkey
Population coverage	All eligible Turkish citizens aged above 15
Analysis unit	Individual/day
Sample size	5070 households

Source: Erkip (2006).

the law, as there is a high fine (500 YTL; more than 200 euros) for refusing to participate in national surveys. Despite these precautions, some people contacted TURKSTAT to question this forced participation for the time-use survey, as its content was perceived as private information about households. In some cases, people were persuaded to participate in the survey when they were informed about the aim of the survey. Although the households were contacted before the visits, it seemed that a general publicity campaign was necessary before the Turkish survey. UN (2005) notes the importance of such a campaign before fieldwork and reports that many countries have discussed the need for incentives to increase the response rate. According to the TURKSTAT officials, this is not an option for Turkey due to financial restrictions (O. Sarica and M. Karakas, personal communication, March–July 2006).

The 13 months coverage is appropriate for a country such as Turkey in which extreme seasonal variations of activities are observed. The household survey is appropriate for the concerns of cost and personnel, yet the aggregate comparison of urban and rural areas may not be sufficient to explore the variances in the application problems of the survey. At this stage, knowing how different regions and urban and rural areas of these regions perceive and record time is extremely helpful to modify survey methods according to the cultural context. As suggested by Haraldsen (1999, 2000) and applied in some developing countries, the Turkish survey could be modified in many ways. At this stage, it is most important to review the application problems and survey methods of the 2006 survey to provide clues for future surveys. Concerning the observed problems of design and application of this survey, our study aims to discuss how it can be enhanced with qualitative methods in the Turkish cultural context.

The field survey

Quantitative methods have also started to become popular in developing countries depending on the economical, technological and educational circumstances. However, as Haraldsen (1999) states, a quantitative time-use approach in developing countries goes together with traditional methods that are shaped according to changes in the national welfare policies. He also adds that qualitative methods have been used more successfully in small communities.

According to the findings of the research, the use of qualitative and quantitative methods together has the potential to provide more enriched information while explaining the collected data, especially, in terms of subjective concepts such as life-satisfaction and well-being of individuals, and the psychological and behavioral reasons behind different time-use habits (Alsaker *et al*. 2006, Erlandsson and Eklund 2006, Michelson 2005, Skevington, *et al*. 2004, Zemke 2004). Another important reason to enhance quantitative time-use surveys with qualitative methods is the need to grasp the causes of the differences between time-use habits of the different gender, income and education groups. In this way, it might be possible to see not only differences between time-uses of women and men or the illiterate and literate, but it might also be possible to explain the reasons for those differences (see Budlender and Mpetsheni 1999, Haraldsen 2000, Michelson 2005 for the details of this argument).

In the light of these arguments and discussions, we conducted a field survey in Ankara, the capital city of Turkey, through which we hope to contribute to the national time-use survey by enhancing it with more qualitative methods (Erkip and Mugan 2008). It took place over three months between March and June 2007. At the start, we considered that, instead of a full diary, a simpler design with a certain focus might provide more reliable and enriched data for the Turkish context. This also helped to reduce the number of household roster questions to a reasonable amount. Predefined activity lists, which were followed up by face-to-face in-depth interviews were accompanied by quantitative household and individual questionnaires. In all these respects, we expected to demonstrate the methodological triangulation that occurs within the scope of time-use surveys.

The predefined activity listing is a method in-between time-use diaries and stylized estimate questionnaires, in which respondents are expected to estimate the time spent on a predefined list of activities on the basis of "yesterday". In deciding on the appropriate activities, the Multinational Time Use Study (MTUS) 40 harmonized activity codes (Centre for Time Use Research, n.d.), the main activity listing of the 1997 Australian time-use survey (UNSTATS), the activity listing used in the LAS 2004 Study by the Social and Cultural Planning Office (SCP) of the Netherlands and some traditional activities in the Turkish cultural context were taken into consideration (see Appendix 1 for the structure of the predefined activity list). We adapted household and individual questionnaires that were used by TURKSTAT, with minor changes.

In the field survey, the main aim was to collect qualitative data, so that quota and convenience/snowball sampling methods were used for approximately 60 individuals. The process ended up with 58 reliable cases. In order to have household and individual questionnaires that were concordant with the sample of TURKSTAT, household members aged 15 years and over were selected. The size of the sample group was determined according to the number of the variables to be measured. These variables are: (1) living in urban/rural regions; (2) gender; (3) working/non-working (respondents were assigned as working and non-working on the basis of their self-report), (4) literate/illiterate (for rural areas literacy was defined as graduation from elementary school, for urban areas it was defined with graduation from high school and over; see Appendix 2 for the matrix of the sample size determined according to variables). This also explains why some cases could not be found in selected settlement types. Some categories were non-existent in some settlements, such as educated women in squatter settlements.

While testing the alternative methods concerning the time-use of a variety of household members from urban and rural areas of Ankara, we gave special emphasis to one of the most ignored components of time-use studies, namely, data concerning space-use other than geographical location. Space is one of the important qualitative determinants of time-use. It is important to understand that time-use activities obtained through diaries should be evaluated concerning their relationship with spaces. In addition to data on what, how long and with whom, data on where the households carry out those activities is also required to obtain clues to time and space planning. Currently, the location of activity is recorded as a generic variable such as home, work, school, etc. in most time-use surveys (UN 2005). Recording the feelings about the space in which the activity takes place might provide space planners and designers with valuable insights about the reasons for the use of spaces and satisfaction level of households while using those spaces. There have been efforts to record subjective experiences through feelings about activities (Haraldsen 2000). A similar approach could be utilized about the feelings related to spaces in which the activities take place. To understand the differences in space-use of different individuals in detail in the Turkish context, urban settlements were classified as gated communities and traditional apartment blocks, whereas rural settlements were traditional village and squatter settlements in the city. In this way, in addition to the comparison of space-use habits of individuals living in urban and rural areas, it was expected to see different space experiences of individuals living in different types of settlements in those areas (see Appendix 2 for the different types of urban and rural settlements).

The household questionnaire and individual questionnaire for each respondent were filled up by two interviewers during the field survey. The researchers themselves did not take part in the data gathering processes except the field observation to prevent biases. To be able to grasp the differences between time-use patterns of weekdays and weekends, activity lists were to be filled up for a weekday for one individual and for a weekend day for the other individual for the same category in each sample group.

Through face-to-face in-depth interviews, which were the dominant qualitative approaches of this study, the relationship between space and time use was further investigated. Face-to-face interviews were conducted with volunteer respondents chosen from the whole sample group. As the data gathering procedure was quite time consuming – it took approximately 1 hour for each individual – it was hard to find people to devote additional time for the interviews, so we approached only 10 people more extensively. In one settlement, we conducted a focus group interview with all groups in the sample. Face-to-face in-depth interviews were also supported by site observations and photographs concerning the settlements in terms of physical characteristics of the household and the neighborhood (see Appendix 3 for the criteria taken into consideration during observation). In this way, the geographical and physical contexts of time-use data were expected to be analyzed better.

Evaluation procedure

We basically relied on qualitative evaluation although we applied statistical analyses whenever possible to show correlations between variables. The household and individual questionnaire forms and activity lists were evaluated by two researchers separately to note prominent patterns of time-use in different settlements. Additionally,

an external reviewer repeated the procedure independently to check the validity of this evaluation. After these three separate processes, common observations and findings were noted to derive results (see Tashakkori and Teddlie [2003a, 2003b] for the procedure for the evaluation of qualitative data). As the major purpose was to cover as much variety as possible with a small sample, measuring time-use correctly was not an expected result. Nevertheless, we determined the differences between the actual time and the perceived activity time of the respondents to understand if there was a pattern of distortion of the time spent in positive or negative activities. Doing this also necessitated some assumptions to reduce the gap between actual and perceived time use, yet after three sets of evaluations we kept the differences for some cases. Estimating the time differently from the actual time helped to see if there were particular reasons or factors causing this gap. Household income, education level and settlement type were considered important in this analysis.

We believe that there is much potential in using more qualitative data and face-to-face interviews to learn how people feel, where the activity took place and why in certain cases, for whom and with whom the activity was performed. Each of these components could be analyzed to enrich the quantitative data. However, this paper only presents an example of leisure activities – measured by duration as well as variety in leisure activities – and investigates if and how they vary according to income, education and settlement.

We have a strong belief that space is influential on time-use both in terms of the physical qualities of the space in which the activities take place and in terms of the location of and facilities provided by the settlement in which the respondents live (our five settlements were chosen to reflect this variety). However, we noticed that the responses to the "where" question did not provide sufficient clues for the first part other than a few specially mentioned spaces – mostly public. People differentiated one shopping mall from the other by name and it was relatively easy to define its characteristics by observing a public space, but the rooms in the dwellings remained undefined in most cases. We could observe the appearance of the house and learned the appliances in and facilities nearby the house. It is interesting to note that some appliances were common to all – all households had at least one TV, refrigerator and washing machine, although only a few had an internet connection, cable TV, DVD, video recorder or car. House ownership also varied.

Findings and discussion

As the sample aimed to obtain the maximum variety through settlement types, it was expected to have a problem of multiple factors in the same group. Thus, we conducted statistical analyses to see if income, education and settlement type were correlated. The settlement type and individual income level ($r = 0.324$, d.f. $= 56$, $p < 0.05$) and education and household income ($r = 0.289$, d.f. $= 56$, $p < 0.05$) appeared slightly correlated. Education vs. settlement type and education vs. individual income were not correlated. Home ownership was correlated with settlement type ($r = 0.260$, d.f. $= 56$, $p < 0.05$), yet the distribution indicates a different pattern from what could be expected. Home ownership seemed to be more common among rural and squatter settlements, followed by gated communities. Our interviews with squatters revealed that home ownership is a security measure for low-income groups. In gated communities, it indicates wealth and social status.

In terms of differences in leisure activities, the results of the statistical analysis (ANOVA) indicated that there were significant differences between settlements in the number of leisure activities other than watching TV ($F = 6.328$ d.f. $= 4$, $p = 0.000$), duration of leisure activities other than watching TV ($F = 3.848$, d.f. $= 4$, $p = 0.008$), duration of watching TV ($F = 2.769$, d.f. $= 4$, $p = 0.037$) and number of leisure activities ($F = 6.178$ d.f. $= 4$, $p = 0.000$). Since the sample size is quite small, these findings need to be supported with qualitative data provided by interviews. It seemed that unoccupied males from the squatter settlement were reluctant to talk about their leisure activities and underestimated the amount and the duration of such activities. A 61-year-old male revealed his daily walk in the park to be one of his important leisure activities along with watching TV, listening to the radio and going on picnics with the family. When the duration of leisure was asked he estimated it as much shorter than it actually was. On the contrary, in the case of a high-income gated-community resident, a 49-year-old women, leisure activities varied from playing tennis to going to sports clubs and other volunteer organizations a few times each week and she estimated the duration of such activities as much longer than it actually was. This is an indication of the role of social class and gender on the perception of leisure activities. In general, males tended to reduce the amount and duration of leisure activities, whereas females were more willing to express them.

Time estimates, number of outdoor leisure activities and overall duration of leisure did not appear to be different along settlements. This indicated that, within a comparable leisure period, people performed different amounts of leisure activities in different settlements despite their varying perceptions about them. Indoor leisure seemed to play a larger role in these differences, so we also checked if house facilities such as balcony and garden had an influence on this pattern. The number of indoor leisure activities ($F = 7.437$ d.f. $= 4$, $p = 0.000$) also varied between settlements. It had a slight negative correlation with living in a dwelling with a balcony ($r = -0.312$ d.f. $= 56$, $p < 0.05$) and also negatively correlated, again slightly, with living in a dwelling with a workshop outside the house ($r = -0.320$ d.f. $= 56$, $p < 0.05$). This supported that housing facilities somehow shaped leisure styles, even if not the duration.

According to our interviews, leisure appeared to be an activity type that was regarded highly by the high-income group more but it was not statistically significant, whereas education seemed to influence the number of leisure activities other than watching TV ($F = 5.728$, d.f. $= 2$, $p = 0.006$) and duration of leisure activities other than watching TV ($F = 3.049$, d.f. $= 2$, $p = 0.055$). It also affected the number of leisure activities ($F = 6.272$, d.f. $= 2$, $p = 0.004$). In fact, education increased the amount of leisure activities for both genders in all types of settlements, regardless of age. A 19-year-old female squatter with a high-school degree performed higher amount of leisure activities compared with other squatters. This pattern was observed also in other settlements. A 72-year-old female with a high-school degree in traditional apartments performed more leisure activities than other people in the settlement. Education also reduced the effect of gender: an 83-year-old male with a degree from a professional high school was still active in many leisure activities. Education appeared more influential on leisure patterns than income and gender. Gender difference did not appear as an important factor in that respect; however gender seemed to be in a more complex relationship with income and education as some cases indicated during our interviews.

The settlement characteristics seemed to have a dominant role in leisure patterns, a finding that requires further research. One of the settlements in our research, traditional apartment blocks with a high sense of community, provided more evidence for collective leisure which was composed of frequent visits to neighbors and shared activities. All respondents in this settlement seemed to be more enthusiastic in participating in communal action and acting in solidarity with their neighbors. A 30-year-old male with a high-school degree showed interest in helping neighbors and old people in his leisure time and he appeared to be much concerned about issues related to environmental protection. Our observations supported that this settlement was physically better maintained than all other settlements in the survey, a finding that might relate to inhabitants' attitude toward their neighborhood.

Implications and conclusion

Our study aimed to enhance the first national time-use survey of Turkey with a special emphasis given to a qualitative dimension of time-use, i.e. space-use. In addition, our field survey was designed as an example to demonstrate how methodological triangulation can efficiently work within time-use studies. The field survey was also expected to provide data triangulation. With the alternative survey methodology that we proposed, what was expected was to demonstrate the benefits of methodological triangulation using qualitative and quantitative approaches as sequences. Nevertheless, two conditions were considered: (1) the national time-use survey of TURKSTAT was an essential component for planning a more qualitative field study; and (2) activity lists and household/individual questionnaires were precedents of face-to-face in-depth interviews for space-use.

Within this framework, qualitative and face-to-face interviews and site-observations seem to be helpful for improving effectiveness of Turkish time-use surveys. Variety in the time-use patterns of different groups could be covered more effectively with the help of such tools. The TURKSTAT survey demonstrated that there is a need to improve data gathering tools to improve data quality (O. Sarica and M. Karakas, personal communication, March–July 2006). In addition, incentives might be helpful to obtain more reliable results.

The qualitative methods that we utilized during the field survey provided important implications for the future time-use surveys. They can be summarized as follows:

(1) There appears to be a different time perception by different groups of people and gender difference in time estimates – negative distortion is more common for unemployed males and positive distortion for high-income and education, not necessarily related to work condition. Gender had an influence only on time estimates, as women appeared to be more accurate than men. This could be related to the second observation supporting a gender difference in reporting feelings. Females talk more easily about their disliked activities, mainly domestic chores; male talk about obligations and routines when they dislike the activity. This could be related to the previous observation about accuracy in time estimates.
(2) Regardless of settlement types and gender, people seem to be disturbed by personal care questions more due to privacy concerns. The degree of

disturbance decreases with income and education. This might be because of the higher sense of esteem of these groups. Low-income groups also tend to underreport their household income, whereas those with higher income seem to be more confident to give accurate estimates. This could be explained by a lower sense of security of low-income groups.

(3) Volunteer work is limited – it is more communal in rural and squatter areas and more organized in high-income urban groups. The type of settlement influences the amount of volunteer work in middle-income traditional apartments. There is a positive distortion in terms of duration of volunteer work as it is praised by society. The same is true for sport activities, which are limited for all groups. Different perceptions exist for the same activity: daily and leisurely walking is reported as a sport activity in low-income settlements due to the positive attitude to sports in the society. People living in gated communities tend to participate in organized sports more compared with other settlement types.

(4) Religious rituals differ among settlements – rural and squatter settlements practice religion more; daily prayers are common, but males go to mosque for praying and socializing with peers, whereas females only pray at home as the religious rules dictate. It seems that some aspects of religion apply differently for gender groups. In the same line, classifying work and leisure is not easy since people did report some categories such as gardening both as work and as leisure. Information about feelings helped us to determine the activity as work or leisure for each individual in the field survey.

(5) Our study indicated that different individuals perceived the same activities differently. For instance, a routine daily walk should be separated from jogging or other sport activities as the responses tended to distort the results. Similarly, reading a book should be separated from reading newspapers or magazines as the former was not very frequent, particularly in low-income and education groups. A location column seems to be necessary, although it is hard to use it as a follow-up in Turkey as geographic information is not well recorded and changes frequently. Our study indicated that settlement type and facilities had a noticeable influence on leisure patterns and number of activities. There appears to be a positive relationship between community ties and spatial characteristics, such as better maintenance and cleaning. To examine this aspect more, the data gathered through observation for each settlement need to be processed further. However, we failed to gather information for the physical properties of private spaces as responses like "living room" or "bedroom" did not give much clue about space characteristics. People usually named public spaces more clearly, such as "Migros Shopping Mall" or "Kizilay district" and this information could further be used to match activities with space characteristic.

Despite the methodological and application problems of the time-use survey in Turkey, aiming to gather such valuable data is nevertheless a good start. The high response rate is also misleading, as it does not reflect voluntary participation in the Turkish context as mentioned earlier. This may be another cause of incorrect responses. Our sample provided us with the opportunity to interview volunteers only, which is not quite possible for a national survey. Nevertheless, some aspects of the national survey can be enriched with additional methods. Hopefully, its implications

and potential will be realized by the society at large. We believe that it is timely to discuss the flaws and problems of the first application to make it a more reliable data source for researchers and social planners.

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Note

1. Earlier versions of this manuscript were presented by Erkip and Mugan (2007) and Mugan and Erkip (2007).

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Appendix 1: Predefined activity list

Weekend ☐ Weekday ☐ **Day:**
Typical ☐ Atypical ☐

Wake up in the morning:
Go to bed at night:

Activities (involves activities starting from waking up in the morning until going to bed at night)	**Time interval * M – Morning N – Midday E – Evening**	**How much time did you spend?**	**Did you like it?**	**With whom did you do this activity?**	**Where were you? (including the vehicle)**	**For whom did you do that?**	**What else were you doing?**
1 – Sleeping, resting, sleeplessness							
2 – Personal hygiene							
3 – Having breakfast							
4 – Eating at home							
5 – Personal care, relaxing							
6 – Travel for personal care							
7 – Paid work at main job							
8 – Paid work at home							
9 – Job search							
10 – Unpaid voluntary work							
11 – Travel to/from work							
12 – School, classes, attending at educational courses, academic courses, job related training							
13 – Homework, study, research							
14 – Travel to/from study							
15 – Shopping							
16 – Shopping malls, City center							
17 – Travel for shopping							
18 – Housework, food and drink preparation/clean up, washing up							
19 – Laundry and clothes care							
20 – Home maintenance, gardening, care of pets							
21 – Travel for domestic work							
22 – Child care							
23 – Care of children, teaching, helping							
24 – Playing, reading, talking with children							

25 – Care of adults and elderly							
26 – Travel for child, adult and elderly care							
27 – Watching TV/video/DVD							
28 – Listening to radio/music							
29 – Internet use, email, chatting							
30 – Other computer use							
31 – Reading paper and magazines							
32 – Religious activities, visiting mosque							
33 – Cultural and community participation, doing civic duties							
34 – Travel for cultural and community participation, civic duties							
35 – Participating in sports							
36 – Having guests							
37 – Visiting friends							
38 – Restaurants, cafes, *kahvehane*, *meyhane*, pubs, clubs							
39 – Cinema, theater, concerts, museums, matches and games							
40 – Talking on the phone							
41 – Writing/reading own correspondence							
42 – Walking							
43 – Zoo, theme park							
44 – Parks, forests, beaches							
45 – Playing games, dealing with hobbies, arts, crafts							
46 – Having coffee, tea, smoking							
47 – Entertaining friends							
48 – Doing nothing, idleness							
49 – Travel for leisure							
50 – Spending time on other things Please indicate:							

Appendix 2. Matrix of the sample size

Settlement	Type of settlement	Gender	Literacy	Working		Name of the respondent	Interview day	Address	Telephone
Urban	Gated communities	Female	Literate	Working	1				
					2				
				Non-working	1				
					2				
			Illiterate	Working	1				
					2				
				Non-working	1				
					2				
		Male	Literate	Working	1				
					2				
				Non-working	1				
					2				
			Illiterate	Working	1				
					2				
				Non-working	1				
					2				
	Traditional apartment blocks	Female	Literate	Working	1				
					2				
				Non-working	1				
					2				
			Illiterate	Working	1				
					2				
				Non-working	1				
					2				
		Male	Literate	Working	1				
					2				
				Non-working	1				
					2				
			Illiterate	Working	1				
					2				
				Non-working	1				
					2				
Rural	Traditional rural village	Female	Literate	Work	1				
					2				
				Non-working	1				
					2				
			Illiterate	Work	1				
					2				
				Non-working	1				
					2				
		Male	Literate	Work	1				
					2				
				Non-working	1				
					2				
			Illiterate	Work	1				
					2				
				Non-working	1				
					2				
	Squatter's house	Female	Literate	Work	1				
					2				
				Non-working	1				
					2				
			Illiterate	Work	1				
					2				
				Non-working	1				
					2				
		Male	Literate	Work	1				
					2				
				Non-working	1				
					2				
			Illiterate	Work	1				
					2				
				Non-working	1				
					2				

Appendix 3. Observation sheet

Type of Settlement:

Detached house: Villa ☐ **Squatter's house** ☐ **Village house** ☐

Gated community apartment block ☐ **Traditional apartment block** ☐

Physical conditions	**Existing/not existing, few/many, distant/close**	**Well cared-for/neglected**	**Visual document (yes/no)**
Physical infrastructure of the settlement			
Security cameras, security guards			
Green area			
Parking lot			
Children's playground park			
Distance to main roads			
Distance to bus/minibus stops			
Shopping mall, supermarket, bazaar			
Cafe, *kahvehane*, bar, club, restaurant, cinema, mosque			
School, university, nursery			
Traffic, traffic noise			
Crowding			
Police station			
Hospital, policlinic, pharmacy			
Pedestrian area, walking area			
Environmental maintenance			
Dustbin			
Garbage			
Hygienic conditions			
Other (please indicate)			