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Where and how family members spend time at home: A quantitative analysis of observational tracking of everyday lives of Italian families

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ABSTRACT

This paper examines a dataset that derives from an observational tracking, in order to analyze where and how middle-class working families spend time at home. We use an ethnographic approach to study the everyday lives of Italian dual-income middle-class families, with the aim to analyze quantitatively the use of home spaces and the types of activities of family members on weekday afternoons and evenings. The different analyses (multiple correspondence analysis, agglomerative hierarchical cluster, discriminant analysis) show how particular spaces and activities in these spaces are dominated by certain family members. We suggest a combination of qualitative and quantitative methodologies as useful tools to explore in detail the everyday lives of families, and to understand how family members use the domestic spaces. In particular, we consider relevant the use of quantitative analyses to examine ethnographic data, especially in connection with the methodological reflexivity among researchers.

Keywords: working families, ethnographic data, observational tracking, everyday life, domestic spaces, activities at home, multiple correspondence analysis, discriminant analysis

Introduction

Over the past decades, only few detailed, reliable, and systematic studies have explored how much time family members spend together at home, and what activities they engage in. In this paper, we examine where and how Italian families spend time at home through a combination of different methods. Our analysis is based on an intensive ethnographic observation of the everyday lives of working families during weekday afternoons and evenings, with the aim to integrate both qualitative and quantitative methodologies. In particular, we will provide a quantitative analysis of the frequency of family togetherness and uses of space in the home, and a general overview of these patterns. The major strength of our method is that it allows for systematic analysis of where family members are and what they are doing at 10-min intervals throughout the observation period. We consider that our research approach can be an important methodological contribution to the social science enterprise: the

combination of different rigorous data collection methods can give a better understanding of how family members use the domestic spaces during their everyday lives. We also suggest to use quantitative analyses to examine ethnographic data, in order to highlight the methodological reflexivity among researchers.

Working families and time spent at home

The sociological and psychological literature on working families emphasize that with many busy life schedules it is difficult for family members to squeeze in enough family time together. With many families having both young children and teenagers it is sometimes difficult to get everyone in the same room at the same time. Further, some studies suggest that children have their own views on family time, and how members may achieve family togetherness through unplanned daily moments (Christensen, 2002; Christensen, James & Jenks, 2000; Kremer-Sadlik & Paugh, 2007). To spend more time together, families are encouraged by media and popular literature to develop specific situations, such as to see movie or to play games. There is still no reason why families should not be spending time with each other. As parents have to balance work and family, this balancing is an issue for a growing number of households, as more children are being raised by full-time dual-earners than in the past few decades (Caper & Bianchi, 2002). Policymakers and family scholars have raised concerns over the quantity and quality of time children spend with parents (Gershuny & Robinson, 1988; Hochschild, 1997; Schor, 1991).

Recently, Schneider and Waite (2005) have discussed how US middle-class families with two working parents could cope with the stresses and demands of balancing work and family life. Based on a study of 500 middle-class families with adolescent or preschool children, the authors have explored how to navigate the demands between work and family life, in terms of conflict that is becoming more pronounced as parents increasingly report working more than 40 h a week. In the United States, more than 40% of working parents arrive at work early or stay late for three or more hours, and nearly 60% take work home with them as they try to conform with work expectations that often collide with and overpower family needs: work plays a significant role in the lives of middle-class working families, and not only in the amount of time they spend at work. Callister (2004) has highlighted that in New Zealand long working hours represents a possible concern for policy makers: in large part, this concern relates to the potential negative effect of long hours of work on the quality of family life. Concerning the European literature, the data evidence that half of parents are unhappy with their work and family balance (Swan & Cooper, 2005). The majority of parents feel that work dominates and their family life suffers, especially spending time with their children. Around 40% of parents spent 2 h or less with their children everyday, a percentage which increases to 59% if they work more than 45 h per week. And 90% of parents felt that working long hours was damaging to their family life. In a cross-cultural comparison, Kremer-Sadlik, Fatigante, and Fasulo (2008) contribute to the understanding of how local cultural models shape different ways in which parents interpret time spent in family and influence individuals' perceptions of their everyday lives. In particular, authors suggest that in the United States parents talk about sheltering and isolating their nuclear family from the outside world and from everyday routine by creating special times and special activities for the nuclear family; in contrast, in Italy parents' discourse allows for spontaneous times with the family that are diffused within routines and merged with other community members, institutions, and social spaces.

Previous studies on the relation between parents' cultural models and their organization during the everyday lives show how meals are an important cultural activity for parents (for instance in Italy, as suggested by New & Richman, 1996; Pontecorvo & Arcidiacono, 2007). In particular,

the kitchen is likely to be an important living space in the Italian context, when family members spend time in doing activities not necessarily related to the preparation of food and to the lunch/dinner.

Finally, we have to observe in great detail the everyday family lives in order to improve more specific studies on how parents and children spend time together at home.

In which rooms working families spend time at home?

Previous analyses of ethnographical data on the use of spaces at home (Graesch, Broege, Arnold, Owens, & Schneider, 2006) show the function of kitchen for a wide range of activities, including schoolwork and job-related work, that otherwise could be performed on work surfaces located elsewhere in the home. The authors suggest that individuals are spatially locating themselves such that they can maximize interactions with other family members who are pursuing a range of activities. This spatial-organizational strategy may be an outcome of changes in the space and logistical complexity of family lives that have developed within the last two to three decades in the United States. Examining how family members locate their activities in space and time may provide insights into strategies used for managing household obligations and achieving family togetherness. We think that it is very important to pay attention to where and how family members spend time at home, together or alone, in order to understand better the organization of the everyday lives. For this purpose, a combination of methodologies is needed (Arcidiacono & De Gregorio, 2008): quantitative and qualitative analyses do not exclude one another, and their integration makes possible to avoid the drawbacks with either methodology used individually (Colucci & Montali, 2008). We will propose a combination of different quantitative analyses of qualitative observational tracking data in order to explore where Italian middle-class working families spend time at home, together or alone, during weekdays afternoon and evenings. On the grounds of this goal and using a merged dataset that derives from an observational tracking, we aim to answer the following research questions: How do families locate themselves during their everyday activities? What spaces are shared with other family members? Where do family activities take place within the home? What spaces are devoted to what (individual and/or common) activities?

More specifically, we intend to analyze how family members manage the domestic spaces by performing multiple tasks simultaneously; what areas of the home bring family members together in social interaction and what areas separate them; who occupies which spaces and for what purposes; where family activities take place within the home, when family members are together or apart, and how they use different spaces to interact among themselves.

We examine quantitatively a dataset including trends in families' uses of home spaces and their activity patterns during the weekday afternoons and evenings. We consider that the tracking permits a fine control of scheduling parameters and allows the exploration of the frequency of family togetherness when all family members have the opportunity to interact at home.

Methodology

A research project on the everyday lives of working families

This study is part of an international collaborative project involving three Centers on Everyday Lives of Families, based in the United States (UCLA, Los Angeles), in Italy ('Sapienza', University of Rome), and in Sweden (University of Linköping). It is based on extensive ethnographic fieldwork in the domestic life of middle-class working families. The main purpose of such an international comparative perspective on family life is that it can illuminate commonalities and differences in how middle-class working families handle the complex work, home and family demands across different cultures and reveals the family pattern

characteristics of each country, which may in turn suggest alternatives to existing local strategies for balancing family and work demands. As suggested by Arcidiacono and Pontecorvo (2004), the observation of behavior at home is very difficult to record and capture through only one conventional methodology, such as participant observation and interviews, and for this reason we think that diverse methods are needed in the multidimensional study of family life, as in the present contribution.

Participant families

The three centers have similar goals and criteria for the recruitment of participants. To be eligible to participate in this research, families were required to be homeowners with a monthly mortgage or with a monthly rent and they had two children living at home, with at least one child between 8–11 years of age. In this study we refer to work done by the Italian Center on Everyday Lives of Families, which documented a week in the life of eight middle-class, dual-income families in Rome (for some socio-demographic information about families, see the Appendix). Families were recruited through fliers in schools, and through personal acquaintances of the research team. After a preliminary meeting with the research team, both parents (and children over 8 years of age) have signed the consent forms of participation and have received the instructions concerning the timing and procedures of the study in their own houses.

Data collection and instruments

In order to observe everyday interactions at home and to analyze the use of spaces, we adapted existing observational tracking method to pull this off. We have employed a range of different methodologies, which included semi-structured interviews and questionnaires, mapping and photographing the families' homes and belongings, video-recording of daily activities over the course of a week. Three researches were engaged in 4 days (two weekdays and the weekend) of video taping and tracking of family members inside their homes. Interviews and field observations were then transcribed integrally (Jefferson, 1985); we have also used ethnographic field-notes in order to mark the activities carried out within families.

In this paper, we particularly focus on the use of a specific method of data collection: the *observational tracking*. It derives from the systematic observations of all family members in their homes at timed 10-min intervals during the course of all video-recorded visits in the home. Our observations concern the weekend and two weekdays per family in two moments of the day: in the morning from the moment in which the first family member wakes up, capturing activities prior to leaving for work and school; in the evening, from the homecoming of the first family member to the end of the dinner and the children's bedtime. Each family has been recorded over the period of a week for approx. 20–25 h. The observations reflect the location, the activities, and the objects incorporated in the activities for each family member at the instant of assessment (David & Kramer, 2001). The term *tracking* refers on how ethnographers could most effectively track family member movements and activities at home while simultaneously structuring observation periods, the frequency of observation, and behavioral coding (Arnold & Graesch, 2002; Ochs, Graesch, Mittmann, Bradbury, & Repetti, 2006). Data that derive from tracking method are well suited to research in which comparative analyses of activities, objects' and space's uses draw upon observations made both within and among groups (Broege, Owens, Graesch, Arnold, & Schneider, 2007; Campos, Graesch, Repetti, Bradbury, & Ochs, 2009). Prior to tracking families' activities in their home spaces, researchers first documented the physical attributes of the family home: home plans were digitized using architectural design software embedded in Microsoft Visio. Upon digitizing the home map, home spaces were assigned numerical labels (including also a common name) that later organized observations of family activities. A tracking database was customized for each

family and uploaded to a Visor handheld computer. The handheld database features pre-programmed drop-down lists from which relevant time, location, and activity data can be inputted for each participant. Trackers (one person per each observation, present with the other two researchers video-recording at the same time the parents' activities) moved through the home every 10 min, recording the home space, participants and activities (see Figure 1). Among observations, trackers often document activities and use of spaces not captured on camera or during video-recorded observations, with the idea to use the video as a strategy that enables the researcher to bridge the gap between what participants say they do, and what they actually do in their practice (Iedema, Heath, & Juhasz, 2009).

As showed by previous studies (Arcidiacono, 2009; Arcidiacono & Pontecorvo, 2009; Jacob, 1982), combining ethnographic and quantitative approaches implies a specific concern for the context and the development of measures having local significance; in particular, researchers have to be sensitive to the local meaning of procedure and instruments, and to the way they fit in the cultural context.

Coding of observations

The quantitative analysis we present here involves descriptive statistics and cross-tabulations of frequencies to assess where family members spend their time and what they are doing at home, either together or apart. We have selected data on family member locations and activities on weekday afternoons and evenings as percentages of total tracking observations.

In the interest of conducting analyses of spaces and activities referring to issues of parsimony and robustness of results, interior home spaces in the tracking dataset were defined as areas bounded by fixed architectural features (e.g. walls and doors), and large furnishings used to divide floor space (e.g. bookshelves). These spaces were assigned numerical labels and common functional labels such as: bedroom, kitchen, living room, home office, bathroom, yard or porch, other (when it was not possible to classify the space into the previous categories). In some case, we coded as 'unknown' the data in which it was not possible to know where participants were. Concerning the activity codes, they were collapsed into the following functional not mutually exclusive categories: leisure, household management, chores, communication, childcare, schoolwork at home, work at home, eating, personal time, and personal care. We added also the category 'other' (in order to include all the activities that were not present into the previous categories, such as sleeping), and the category 'not at home', when a participant was not present during the observation. Whereas few of these categories

Time code	Location	Participant	Activity	Notes	Infra-movements
7:05 am	KT	A	preparing breakfast	talking with B	
	PBR	D	sleeping		
	CBR	C	sleeping		
	BTH1	B	dressing	door closed	leaves BTH1
7:15 am	KT	A	preparing breakfast		
	PRB	D	sleeping		
	CBR	C	sleeping		
	BAL	A	starting washing machine		

Figure 1: Example of tracking output.

are obvious in terms of the activities they include (e.g. schoolwork at home), we clarify a few others here: examples of leisure include, among others, reading, watching TV, and playing games; examples of chores include cooking, cleaning, repairs, and laundry; communication includes talking to a person or on the phone, emailing, listening, and discussing; personal time includes individual activities such as meditating and praying; personal care includes grooming, dressing, napping, and taking medications; childcare includes every acts of caring for and supervising children. Reliability tests were conducted on the collapse of the codes to ensure that the process was consistent across at least two coders[1]. In particular, the degree of agreement among raters has been determined by calculating the mean of the difference between raters. This approach looking at the limits of agreement shows a mean near zero and a narrow confidence interval. It indicates that raters tend to agree. In the following part, we present frequencies of the location of family members in the home spaces, frequencies of the family co-presence at the same space, and frequencies of activities of the family members during the observational tracking. In order to identify family members we use the following codes: A = the mother; B = the father; C = the target child (aged from 8–11 years); D = the sibling.

Analytical approach

We will provide an analysis of the frequencies of activities that family members do at home, together or alone, and we will discuss the correlation between these activities and the spaces in which they are played by parents and children.

Firstly, we refer to the multiple correspondence analysis (MCA), which is a method that allows studying the association between two or more qualitative variables (Greenacre, 1984), in order to visually observe the distances between the categories of qualitative variables and between observations. In our study, we have used the software XLSTAT (version 2008.1.01) that starts the analysis from a full disjunctive table (indicator matrix). A series of transformations allows the computing of the coordinates of the categories of the qualitative variables, as well as the coordinates of the observations in a representational space that is optimal for a criterion based on inertia. In the case of MCA the total inertia is equal to the average number of categories minus one (as a matter of fact, the inertia does not only depend on the degree of association between the categories but is seriously inflated). Starting from this base, the analysis of a subset of categories is a method that has very recently been developed (Greenacre & Pardo, 2006); it allows us to concentrate the analysis on some categories only, while still taking into account all the available information in the input table. In order to test the possibility to recognize different groups we will use the agglomerative hierarchical clustering (AHC), which is a bottom-up clustering method where clusters have sub-clusters, which in turn have sub-clusters, and so on. The analysis uses Euclidean distance: initial cluster centers are chosen randomly in a first pass of the data, then each additional iteration group observations is based on nearest Euclidean distance to the mean of the cluster. This algorithm seeks to minimize within-cluster variance and maximize variability between clusters until cluster means do not shift more than a given cut-off value or the iteration limit is reached. Finally, we will employ the discriminant analysis (DA) in order to control the pertinence and the quality of the presentation of cases into classes.

Where and how family members spend time at home: A quantitative analysis

Location of all family members in home spaces

Firstly, we propose data that concern the frequencies of the location of all family members in the different spaces we have coded. Data concern family members when they are together in the same home's space during the weekday afternoons and evenings. Table 1 shows the simultaneous presence of all

[1] Reliability statistics revealed that the collapse was successful (Cronbach's alpha = 0.92).

participants during the observational tracking (data are related to a total of 16 time observations).

Table 1 shows that family members usually spend time together in the kitchen; given that frequencies for bedroom spaces may be slightly high in our samples due to our method of grouping observations and responses for functionally similar rooms, kitchen actually emerges as the most intensively used space in Italian middle-class family homes (39%). The kitchen area tends to be used by all members of the family, as setting for daily mealtime, school-related, organizational, game and shared activities. The other space used by all family members is the living room (21%), classified in this analysis as a family room, and TV room: furnishings typical in this space include couches, reclining chairs, televisions, stereos, computers, and other video equipment. The third space in which all family members spend time together are the bedrooms (19%) that are both parents and children bedroom. All family members minimally use the other spaces at the same time. In particular, the low frequency of the category 'home office' is related to the fact that only few participants have such an extra room in their house.

Table 1: Frequencies of participants' location in the home spaces

Location	All family members simultaneously (*f*)	Percentages
Kitchen	168	39
Living room	89	21
Bedrooms (both children and parents)	83	19
Not at home	34	8
Bathroom	20	5
Other	20	5
Home office	2	0
Unknown	1	0
Total	432	100

We next examine where individual family members spend time in the house: in Table 2 some notable differences emerge as concerns where mothers, fathers, and children spend time (data are related to a total of 16 time observations).

The analysis reveals that there is an association between family members and the use of home spaces ($\chi^2 = 147.9$, $df = 24$, $p < 0.01$). Table 2 shows that the kitchen space was most intensively used by mothers (44%) and fathers (29%), whereas children spent most of their time between the kitchen and the bedroom. The kitchen and the bedroom, in general, are spaces that receive a good deal of traffic and are *loci* for numerous and collaborative activities.

Table 2: Frequencies of observations in each location by family members

Location	A	B	C	D	Total
Kitchen	129 (44%)	86 (29%)	86 (29%)	82 (28%)	383 (33%)
Bedroom	57 (19%)	64 (22%)	84 (29%)	91 (31%)	296 (25%)
Living room	23 (8%)	58 (20%)	55 (19%)	53 (18%)	109 (16%)
Bathroom	29 (10%)	21 (7%)	27 (9%)	29 (10%)	106 (9%)
Not at home	19 (6%)	42 (14%)	14 (5%)	16 (5%)	91 (8%)
Other	25 (9%)	16 (5%)	18 (6%)	13 (4%)	72 (6%)
Yard or porch	11 (4%)	5 (2%)	7 (2%)	6 (2%)	29 (2%)
Unknown	0 (0%)	0 (0%)	3 (1%)	3 (1%)	6 (1%)
Home office	1 (0%)	2 (1%)	0 (0%)	1 (0%)	4 (0%)
Total	294 (100%)	294 (100%)	294 (100%)	294 (100%)	1176 (100%)

Family co-presence at home

We devote a specific attention to the situations in which either parents or children were together in the same home space. Overall, the frequencies of these types of congregation (see Table 3, in which data are related to a total of 16 time observations) were low in the tracking dataset and present only for some spaces; anyway there is an association between family co-presence and location ($\chi^2 = 13.8$, $df = 4$, $p < 0.01$).

In those instances in which both parents are together in the same home space, the data indicate that kitchen is the most used space. This strong orientation to the kitchen space can be explained in part by the mediating role of material culture in this area: kitchen, for instance, contains specialized assemblages of fixtures (e.g. sink), appliances (e.g. oven, refrigerator), and furniture (e.g. tables, chairs) that tightly structure the location of food preparation, consumption, storage, and post-meal cleaning activities. Many of parents' meal-related activities are thus predictably anchored to the kitchen on weekday afternoons and evenings as family members return home from work and school. Considering that opportunities for time together for dual-income working families are largely limited to the span of time between the point at which parents return home and the point at which children are put to bed, it is perhaps not surprising that parents choose to attend the kitchen space for purposes of maximizing activities.

Not surprisingly, the children's bedroom is the most frequent *locus* for shared activities of children, according to the previous data in which children spend more time in their bedroom, also alone. Children prefer to use the bedroom because a large part of activities in this room involve the use of computer, television, video game console equipment and table games, which are located in these spaces. However, as explained before, our general category of 'bedrooms' includes both parents and children bedrooms, because of the multifunctional use of parents' bedroom that we have also observed in video-recordings.

Activities of family members

In this section we pay attention to the different activities that involve family members in different home spaces. The following table shows the frequencies of the activities in which each family member is engaged (data are related to a total of 16 time observations). Even in this case, there is an association between the variables ($\chi^2 = 385.6$, $df = 36$, $p < 0.01$).

Table 4 represents a wide range of activities, but no single category represents more than 28% in the individual project dataset. The preponderance of family time at home (15%) was spent pursuing eating and related activities (household management and chores were respectively 13% and 11%), although activities classified as leisure (14%) and communication (13%) were also frequently observed. Notable evidence concerning participants' activities is the extent to which families were engaged in activities classified as personal care. These activities represent only 10% of family time in the tracking dataset: this result is related

Table 3: Family co-presence in the home location (only for the selected spaces)

Location	Only parents together A + B	Only children together C + D	Total
Bedroom	0 (0%)	10 (67%)	10 (48%)
Kitchen	5 (83%)	2 (13%)	7 (33%)
Living room	0 (0%)	2 (13%)	2 (9%)
Bathroom	0 (0%)	1 (7%)	1 (5%)
Other	1 (17%)	0 (0%)	1 (5%)
Total	6 (100%)	15 (100%)	21 (100%)

Table 4: Frequencies of activities by family members

Activities	A	B	C	D	Total
Eating	33 (11%)	39 (13%)	47 (16%)	55 (19%)	174 (15%)
Other	34 (12%)	43 (15%)	45 (15%)	53 (18%)	175 (15%)
Leisure	8 (3%)	26 (9%)	65 (22%)	61 (21%)	160 (14%)
Communication	42 (14%)	36 (12%)	39 (13%)	31 (11%)	148 (13%)
Chores	83 (28%)	29 (10%)	15 (5%)	7 (2%)	134 (11%)
Personal care	13 (4%)	22 (7%)	38 (13%)	41 (14%)	114 (10%)
Not at home	19 (7%)	41 (14%)	14 (5%)	15 (5%)	89 (8%)
Childcare	40 (14%)	21 (7%)	0 (0%)	0 (0%)	61 (5%)
Schoolwork at home	10 (3%)	6 (2%)	20 (7%)	18 (6%)	54 (4%)
Personal time	1 (0%)	15 (5%)	8 (3%)	7 (2%)	31 (3%)
Household management	11 (44%)	2 (1%)	0 (0%)	0 (0%)	13 (1%)
Work at home	0 (0%)	14 (5%)	0 (0%)	0 (0%)	14 (1%)
No data	0 (0%)	0 (0%)	3 (1%)	6 (2%)	0 (0%)
Total	294 (100%)	294 (100%)	294 (100%)	294 (100%)	1176 (100%)

to the fact that ethnographers were forbidden to record activities in private spaces as bathrooms, which include many of the activities classified as personal care (e.g. dressing, bathing, grooming, and taking medications).

These results suggest the relevance of combining different variables, in order to better understand how and where family members spend time at home. For this reason (the table is not shown for spatial reasons), we divided the activities and the most used home spaces for each family member (the data referring to the category 'Not at home' was not considered). The data show that in general mothers are mainly engaged in activities related to childcare and communication; in the kitchen they are also engaged in chores, but the presence of the other family members is also an occasion of leisure (for example for fathers and children), or to share activities and to communicate. In particular, the kitchen is the space in which the communication is central for the family, in spite of the fact that they spent time above all to eat in this space. Concerning the living room, is relevant the fathers' use for personal time (not present for mothers), and the fact that their leisure is connected to children's leisure in this space.

In order to explore where and how family members spend time at home we have used different types of analysis, also to verify the correlation between the variables we selected. For this reason, we present three steps of analysis.

Step 1: Associations between spaces, activities and family members

In this study, the software XLSTAT we used allows us to select the categories that belong to the subset. As scores of individual cases on the factorial axes became quantitative, we assume to be authorized to make a statistical classification. The results of the MCA we applied (using four variables) show that there is not discrimination between previous values. Anyway we have a correlation (the table is not shown for spatial reasons) between observations and axes that suggests relationships between participants, and specifically between father and sibling (B and D = 72.5%), and between children (C and D = 95.6%). Data

indicate a potential correlation between activities done in some space and the co-presence of family members. For this reason, in the following section we will explore the way in which different groups can emerge from correlations.

Step 2: The structure of the correlation

In order to test the possibility to recognize different groups we used the AHC to analyze the score of participants on the basis of the factorial axes of the MCA. Starting from 60 cases, the typology that fits our data is based on five classes: we have used the structure of the AHC because of its advantage to produce an ordering of the objects, which may be informative for data display (even if no prevision can be made for a relocation of objects that may have been 'incorrectly' grouped at an early stage). Considering the dispersion of the MCA's information, and in order to observe the five groups/classes we identified, we have used a K-means clustering analysis. In this way, we have minimized the risk to attribute random the participants in each class. After this, all cases have been distributed in a class.

Step 3: The validation of the classification

We have employed then DA in order to validate the classification into five classes we determined. The classification matrix has showed the number of cases that were correctly classified and those that were misclassified. In our case, the correlation between the variables in the model and the functions has been confirmed in the structure matrix by the high probability of the quality of our classification participants by participants (in this sense, we have used the Boolean side of the DA in order to confirm our classification).

In the following part, we show graphs of cases on the discriminant dimensions: the canonical discriminant functions (that found linear combinations and show which variables are discriminant within the groups) are displayed in the following Figure 2. We consider the axes 1 and 2 because of their values of variance (85.3% in total). Specifically, the first function represents the 68.6% and the second function represents the 16.7% of variance.

We have identified the nature of the discrimination for each discriminant (canonical) function by looking at the means for the functions across groups. Looking at the Figure 2, we can underline that groups 1 and 4 appear to be really different, in spite of groups 3 and 5 that can be considered as a hinge. The group 2 seems to have proper dynamics, even if it includes few cases. The heterogeneity of the classification is explained by the fact that there is a high variance within groups.

On the basis of the casewise statistics, for the original data, squared Mahalanobis distance[2] has been based on canonical functions; for the cross-validated data squared Mahalanobis distance has been based on observations. In cross validation, each case has been classified by the functions derived from all cases than cross-validated cases. For each group in our sample we have determined the location of the point that represents the means

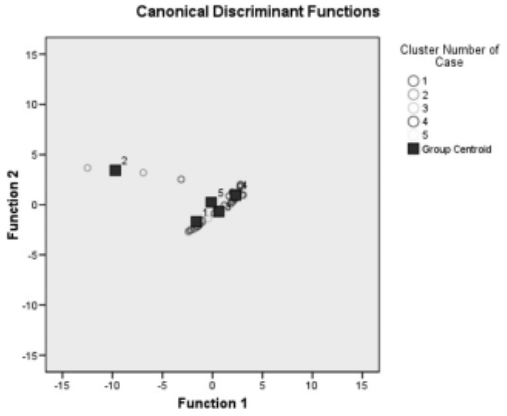

FIGURE 2: CANONICAL DISCRIMINANT FUNCTIONS.

[2] It is an index other than Wilk's lambda of the extent to which the discriminant functions discriminate between criterion groups. A measure from this group could be used in stepwise discriminant analysis to determine if adding an independent variable to the model will significantly improve classifications of the dependent variable.

for all variables in the model. For each case we have computed the Mahalanobis distances (of the respective case) from each of the group points (centroids). Then, we have classified the case as belonging to the group to which it was closest (where the distance was smallest). The classification of the results is showed in the following Table 5.

The results of the analyses show that in the original group and in the predictive group, group 1 and 4 are mixed: there is a transfer of case from group 1 to group 5, and from group 4 to group 5. The classification of groups we have found, suggest that the main criterion to consider the characteristics of the five groups are the properties of the spaces with respect to the participants (see Table 6).

Tables and data we have presented in this section allow us to confirm the classification:

Table 5: Classification results[b,c]

	Cluster no	Predicted group membership					Total
	of case	1	2	3	4	5	1
Original							
count	1	10	0	0	0	2	12
	2	0	2	0	0	0	2
	3	0	0	3	0	0	3
	4	0	0	0	15	1	16
	5	0	0	0	0	1	1
%	1	83.3	0	0	0	16.7	100.0
	2	0	100.0	0	0	0	100.0
	3	0	0	100.0	0	0	100.0
	4	0	0	0	93.8	6.3	100.0
	5	0	0	0	0	100.0	100.0
Cross-validated[a]							
count	1	9	0	0	0	3	12
	2	0	2	0	0	0	2
	3	0	0	2	0	1	3
	4	0	0	1	14	1	16
	5	1	0	0	0	0	1
%	1	75.0	0	0	0	25.0	100.0
	2	0	100.0	0	0	0	100.0
	3	0	0	66.7	0	33.3	100.0
	4	0	0	6.3	87.5	6.3	100.0
	5	100.0	0	0	0	0	100.0

[a]Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.
[b]91.2% of original grouped cases correctly classified.
[c]79.4% of cross-validated grouped cases correctly classified.

Table 6: Characteristics of the activities and spaces for each group

Group 1	Group 2	Group 3	Group 4	Group 5
B-Chores		B-Personal time	B-Childcare	
B-House management			B-Communication	
B-Leisure			B-Personal care	
B-Other			B-Schoolwork at home	
K-Leisure	K-Chores	K-Childcare	K-Communication	K-Eating
K-Personal care			K-Other	
K-Personal time				
K-Schoolwork at home				
L-Chores	L-Personal care		L-Childcare	
L-House management			L-Communication	
			L-Eating	
			L-Leisure	
			L-Other	
			L-Personal time	
			L-Schoolwork at home	
			L-Work at home	

the five groups we have identified have some specific characteristics, connected to properties (spaces and activities) more than participants (family members). We can consider group 1 and group 4 as complementary in the original and in the predictive groups. In particular, in the group 1 there are specific activities in specific spaces: the data show that the location is the main characteristic of this group, that includes family members doing chores and house management (parents), leisure and other activities (children) in the bedrooms; or leisure, personal care and personal time (all family members) in the kitchen. Children also are doing schoolwork at home in this room. The second main group that presents a certain number of relevant characteristics is the group 4: family members share in bedrooms different activities, such as communication, personal care and schoolwork at home. Parents also engage in childcare activities in these rooms. Another space that characterizes the group 4 is the living room: in particular, on one hand parents spend time in childcare, and on the other hand all family members engage in communication, eating, leisure, personal time, schoolwork at home, and other activities not included in our classification. Fathers also engage in work at home in the living room. Some evidence is also present concerning the kitchen, where family members communicate and do other activities. In our classification it seems that groups 2 and 3 are characterized by the activities more than the spaces: in fact, the properties of the group 2 concern (for all family members) chores in the kitchen and the personal care in the living room. In the group 3 we observe the use of bedrooms for the personal time of family members and the activity of childcare in the kitchen for parents. Finally, in the group 5 there is an implicit confirmation of the availability of our classification, because of the fact that the kitchen is characterized by the activity of eating for all family members.

These results offer a possibility to consider a certain type of classification as the way to recognize where and how family members spend time at home. The characteristics of each group could be considered in the light of both properties we underlined, such as the space and the activity that participants could do during the everyday interactions we observed.

In the following part we will offer some evidences for discussing these results in the light of a larger management of the everyday lives done by family members.

Conclusions

All the results of this study represent a relevant starting point for a more detailed analysis of where and how family members spend their time at home: the tracking dataset concerning the observation of the everyday lives of middle-class working families is a focal instrument to know how participants realize the organization of weekday afternoon and evening activities.

The first level of our analysis suggests that family members usually spend time together in the kitchen. In particular, this space is also the preferred individual location of parents for different activities, also related to the cooking. Children prefer to spend their time between kitchen and bedrooms, usually waiting for dinners, watching TV, and playing computer games. The results about the co-presence confirm the previous trends: parents stay together in the kitchen, and children in bedrooms. Concerning the observation of the activities, the data show that the main activities are related to the dinner (eating), even if a lot of data are referred to the category 'other'. A certain number of observations reveal that family members spend time also in leisure, communication, and then in chores and personal care activities. The finding concerning the fact that mothers and fathers use the kitchen space more than children (and mothers more than fathers) can be also considered in terms of gendered family roles, and in terms of the use of the material artifacts of the kitchen by parents.

The second level of the analysis, based on frequencies of the previous analyses, points out different results about the possibility to recognize trends in the use of spaces at home by family members engaged in different activities. By the analysis of the Multiple Correspondence we have considered the associations between participants, and in particular between father and sibling and between children where they were taking part in shared activities within a space. For this reason, in order to test the possibility to recognize different groups with specific characteristics, we have used the AHC and we have identified five groups by the K-means clustering analysis. Then, the DA has allowed us to distribute participants into the classes we identified and to indicate the correlation between variables and discriminant functions. By minimizing the Mahalanobis distance we have obtained that group 1 and group 4 are complementary in the original and in the predictive groups, thus we can consider the characteristics of these groups (spaces and activities) as relevant in the classification of the correlations between variables.

The combination of analyses suggests that in groups 1 and 4 the location is the criterion to affirm if, in a specific room (kitchen, living room or bedrooms in our study), is possible to predict a series of activities that participants (collectively or individually) can probably do.

The observational tracking permits to explore some patterns of middle-class working families during their everyday activities at home: the data have suggested that when middle-class working families spend time together, they engage in activities that accomplish essential tasks. Family members spend most of their time in the kitchen or in the bedrooms, with children often participating in homework or leisure activities and mothers most often doing chores. When together, family members most commonly are in the kitchen and are engaging in eating and communication. These results confirm the central role of the kitchen as a living space that includes family members as a community (Lyra, 2007). The kitchen is the part

of the house towards which the Italian families tend to gravitate. It is a space where they can share different concerns and where family members often engage themselves in conversation. Even if the table had always been an important place in Italian houses, the size and the location of the kitchen depend on social status and can affect its significance in the home. As result of the process of Italian modernization, the kitchen became more and more a social area of display the everyday life. Also guests are entertained in and around the kitchen. The Italian kitchen is also a functional area, but most people do not treat it like a place to just get the cooking done and leave. It is the place where family members spend most of their time together in an atmosphere of conviviality (Mallett, 2004).

We have observed significant variability in family activities, moods, degrees of togetherness, and these cannot be simplistically linked to any specific causal variables. Parents' involvement in different activities (such as children's homework activities) can be also considered as the product of the presence of ethnographers in the home, as a desire to behave in accordance with culturally constructed notion of ideal family life. However, behaving in ways that were not consistent with everyday activities and interactions in the home would have required a considerable expense of energy by parents, and notable breaks in home routines would have generated pointed questions from other family members. People are continuously involved in a process of spatial organization that demands new borderlines and meanings linked to beliefs and representations of general categories such as private–public, indoor–outdoor, personal–collective. As suggested by Berglund-Lake (2008), family members have to cope with different everyday life presupposed activities and it implies movements through which the home's organization and the spaces' use are always related to people and things of the external world.

As the conclusion of this explorative study, we believe that a culture change is required in the workplace if we are to enable families to spend the time they need to build strong relationships and to live more healthy lifestyles. An end to the long hours culture and greater flexibility in the workplace for all employees would allow parents to spend more time with their children.

In this sense, we think that there is also an educational value of the spaces' use: children are socialized to the use of spaces by parents, through the specific activities they conduct continuously in each room. Children are socialized to use certain spaces as locations to do specific activities, and this process is constructed through the practice of an activity, as we can observe through the tracking we have used for this study, and also through the parents' verbal explanations to children in order to offer the reasons of doing something in a specific space. We think that this last point can have an educational relevance in terms of cultural value of the practices of socialization to the spaces' use: it will be interesting to compare these characteristics of Italian families with, for example, the dataset of the US and Swedish families, in order to confirm or to interpret differently the evidences highlighted by the present study.

We also think that there is a potential value of the methodology we used, in order to observe the everyday lives of families and to combine different variables connected to the use of spaces and the modalities to organize daily routines. Other specific aspects related to the shared use of home spaces by parents and children can also be observed, in order to explore different detailed combination of variables we have considered in this study. In addition, it is also possible to relate results of this study with other evidences, by the combination of this ethnographic method with other data collected by video-recordings, interviews, questionnaires, and so on, as well as within a cross-cultural comparative perspective. As family life is very difficult to observe as a monolithic event, we need to triangulate methods in order to account for the complexity of family interactions at home. In this sense, we think that this paper provides a spatially oriented perspective on

the organization of family life, illustrating interconnections between spaces, activities and family roles. We also think that the use of specific methods of research, such as the observational tracking, allow us to better understand not only how parents and children use spaces, but also to consider the implications of the architectural conception of home spaces, in connection with the needs, the constraints and the effective uses of locations by family members. Further studies will address supplementary research questions, such as: what does this kind of analysis have to say about a research agenda focused on the use of space to support activities, and how then does that address issues of interactions within families, especially in connection with the gendering of spaces?

Finally, another possible implication concerns the study of the effect of the presence of the researchers as participant observers during the data collection: for example, it can activate implicitly some expectations by family members, in terms of the analysis of different practices they do at home, and in this sense the reflexivity done by researchers (for example about the dynamics of domestic-space appropriation in family, cf. Giorgi, Padiglione, & Pontecorvo, 2007) can be a tool to better understand the relation between participants and observers and to interpret the patterns of spaces' use by family members. We argue for a central and critical role for reflexivity in research with the aim to develop not only everyone's understanding of what everyone does in research, but also how and why everyone does it. It is an attempt to explore in reflexive and ongoing ways the pinches, binds and gaps (Raven, 2006) of the research, and to develop a more critical consideration of the role of reflexivity in developing research practice.

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Appendix

Participants families' socio-demographic information (to ensure anonymity fictitious names replace real names)

CALI family: resident in suburban neighborhood. MOM: 42 years old (esthetician); DAD: 44 years old (design project manager); child 1 (female): 7, 6 years old (grade 1); child 2 (female): 3 years old (kindergarten)

CILO family: resident in suburban neighborhood. MOM: 38 years old (cleaning agent); DAD: 39 years old (accountant); child 1 (female): 13 years old (grade 8); child 2 (female): 11 years old (grade 6)

GITI family: resident in suburban neighborhood. MOM: 34 years old (web designer); DAD: 42 years old (manager); child 1 (female): 8 years old (grade 2); child 2 (female): 1 year old (nursery)

MARI family: resident in city center. MOM: 47 years old (teacher); DAD: 50 years old (teacher); child 1 (female): 13 years old (grade 8); child 2 (male): 8 years old (grade 2)

OLMI family: resident in city center. MOM: 41 years old (copywriter); DAD: 41 years old (high manager); child 1 (male): 10,6 years old (grade 5); child 2 (male): 6 years old (grade 1)

PICO family: residential suburban neighborhood. MOM: 46 years old (shopkeeper); DAD: 50 years old (Defense Minister's employee); child 1 (female): 12 years old (grade 7); child 2 (female): 10 years old (grade 5)

QUADRI family: resident in central neighborhood. MOM: 43 years old (TV program manager); DAD: 46 years old (architect); child 1 (male): 12 years old (grade 7); child 2 (female): 8 years old (grade 3)

RIPE family: resident in city center. MOM: 47 years old (creative manager); DAD: 55 years old (administrative coordinator); child 1 (male): 13 years old (grade 8); child 2 (male): 10 years old (grade 5)

The participant families live in flats of approximately 70 m^2. In most of the cases the flat includes a small kitchen (10 m^2) separate from a living room, a parents' bedroom, one child bedroom and one bathroom. Some family has two bathroom and two children's bedrooms.