

Online Appendix A Instrument design

Our diary starts at 4 a.m. of the assigned day and ends 24 hours later. The time diary is designed to allow users to flexibly define time slots/episodes for each performed activity with a pre-specified minimum duration of 10 minutes. For each episode, the respondents have to pick an activity from a pre-determined list following a hierarchical structure. This facilitates the finding of the activity they wish to report, thus reducing measurement errors. In case they were doing more than one activity at the same time, they are explicitly invited to choose the activity they consider the main one. At the highest level, they are asked to choose one among 11 macro-categories, such as “Sleep, eat, and personal care”, “Work/study activities”, “Household activities”, and “Childcare” (Figure A.1, central panel).¹

Figure A.1: Selection of Activities & Time

The figure displays three panels of a mobile application interface for selecting activities and time.

Left Panel: A screen titled "Your day 5/26/2021 - 04:00" with a close button (X). It asks: "Which of these activities were you doing at 04:00 on Wednesday 5/26/2021?" and "Please choose the main activity you were doing at 04:00 on Wednesday 5/26/2021. You may have been doing more than one activity at the same time, but please choose the activity you consider to be the main one." A "Choose activity" button is at the bottom.

Central Panel: A screen titled "Your day 5/26/2021 - 04:00" with a close button (X). It lists 11 activity categories, each with a right arrow: "Sleep, eat, personal care", "Work/study activities", "Household activities", "Childcare", "Activities of support for others, club membership, and volunteering", "Social life and entertainment", "Sport and outdoor activities", "Hobbies and pastimes", "TV, reading, communication and mass media", "Travel", and "Other".

Right Panel: A screen titled "Your day 5/26/2021 - 04:00" with a close button (X). It shows the selection of "Sleep, eat, personal care" (indicated by a back arrow). Below this is a list of sub-activities: "Sleeping, staying in bed (including for illness)", "Insomnia, tossing and turning in bed", "Eating or drinking", "Washing, dressing, combing hair", "Going to the doctor/dentist", and "Other personal care activities (please specify, e.g. barber, hairdresser etc.)". A "Continue" button is at the bottom. Below the right panel is a time selection grid.

Time Selection Grid: A grid for selecting hours and minutes. The "Hours" section shows a 4x4 grid of numbers from 0 to 23, with the number 2 highlighted. The "Minutes" section shows a row of numbers: 0, 10, 20, 30, 40, 50, with 10 highlighted. "Close" and "Select" buttons are at the bottom.

¹The design of our tool, the selection of the activities included in our list, and their categorization were inspired and guided by the *HETUS European guidelines* for time-use diaries (Eurostat, 2019), The Netherlands Institute for Social Research app-based experience (Fernee and Sonck, 2014), the American Time Use Survey (United States Bureau of Labor Statistics, 2019), and the last available Italian Time Use Survey undertaken in 2013-104 by the Italian National Institute of Statistics ISTAT (ISTAT, 2018).

After selecting the macro-category, they can pick among a more detailed sub list of activities, which add up to 69 in total, across all macro-categories excluding Childcare (Figure A.1, top-right panel). Since the focus is on the time parents spend with their children, childcare activities are organized within a three-level, rather than a two-level structure: respondents first choose from a set of sub-categories, and then select the activity. The Childcare macro-category includes 11 sub-categories (see Figure A.2) and 68 activities in total. The full list of 137 activities of the time-use questionnaire is available in Online Appendix B. The next step is to state the duration of the activity, with time intervals consisting of a minimum of 10 minutes, selecting the time at which the activity ended (Figure A.1, bottom-right panel). In case the reported duration of an activity is longer than 120 minutes, in order to avoid involuntary mistakes in data entry, a pop-up alert appears on the screen and asks respondents to confirm their choice.

Figure A.2: List of Childcare Sub-categories

Your day 5/12/2023 - 3:00 PM

< Childcare

- Support and care
- Reading or writing with your children
- Playing with your children
- Leisure and cultural activities
- Manual recreational activities
- Outdoor activities and sport with your children
- Indoor activities and sport with your children
- Speaking with or listening to your children
- Organization, supervision, travel for care and accompaniment
- Activities related to school, religious education, and extracurricular courses
- Medical care for your children

< Playing with your children

- Playing with your children outdoors
- Going to the playground with your children
- Playing with your children indoors
- Playing games sitting down with your children (cards, jigsaw puzzles, board games etc)
- Playing with dolls or soft toys with your children
- Playing with model trains, cars, or similar toys with your children
- Playing videogames with your children (on mobile phones, consoles, or computers)
- Playing with your children at acting out roles or dressing up
- Dancing, laughing, or joking with your children
- Playing at creative or building games (lego, model-making etc) with your children
- Other kinds of games (specify)

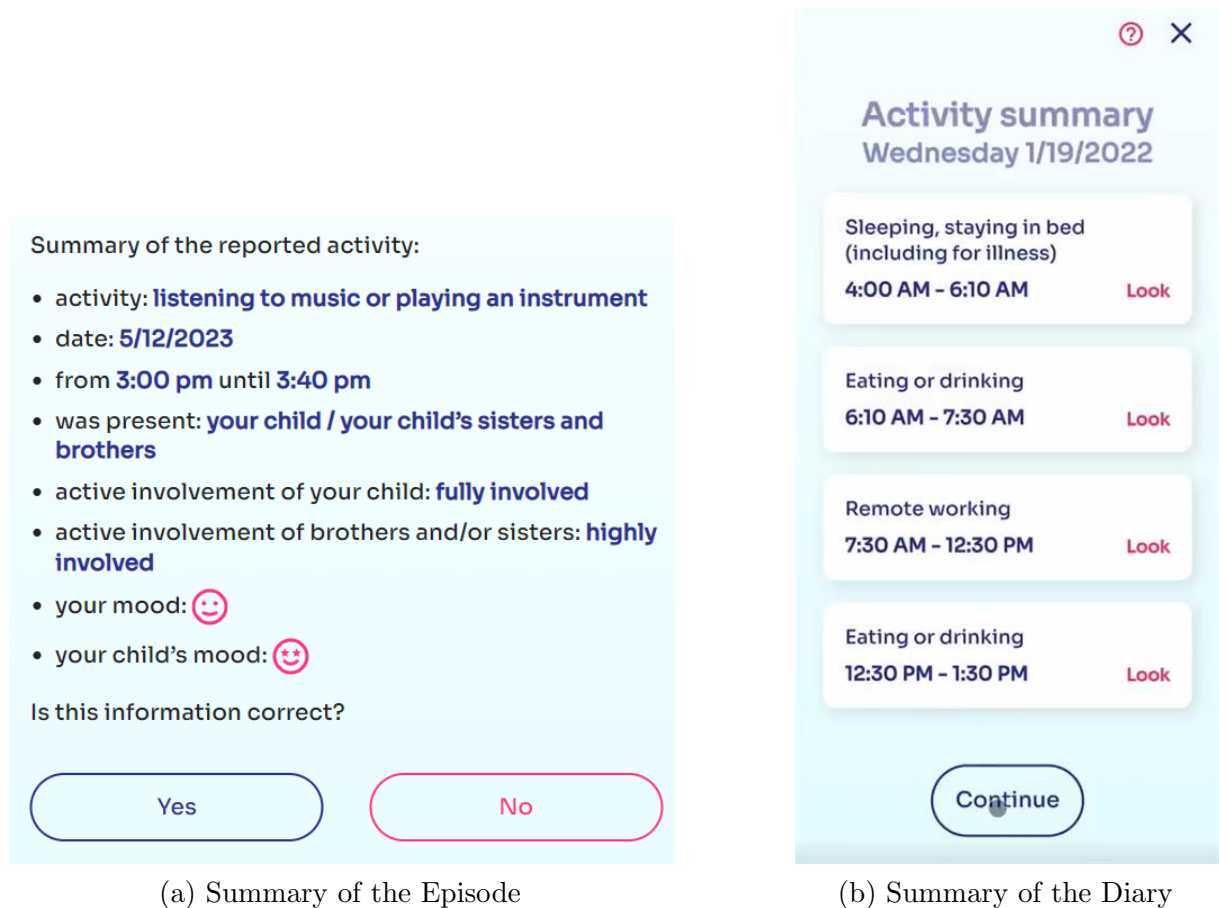
The question on the duration of the activity was followed by a few additional questions

on contextual information described in Section 2.

Finally, a summary of the episode reporting the activity, its starting and ending time and contextual information is shown to the users (Figure A.3a), and they are asked to confirm their choices. Moreover, respondents can see the summary of the whole diary after every answer, and each single activity can be modified or deleted ex-post (Figure A.3b). The questionnaire ends when the parent enters an activity that ended after 4:00 a.m. of the day following the one covered by the diary, that is, when sum of all the described activities covers a time-span of at least 24 hours.

The completion time of the whole 24 hours diary is about 20 minutes. Parents have the flexibility to pause the time-use survey at any point and resume it later. After submitting each activity, parents can view a summary of the diary entries (Figure A.3b) and modify activities as needed. Before opening the diary, the respondent can watch a short video tutorial with instructions.²

Figure A.3: Summary of the Episode and of the Diary



²The video is available at the following link: <https://www.youtube.com/watch?v=f75d9SE45KI>

Online Appendix B Complete list of activities included in the app-based time-use survey

Table B.1: List of activities included in each Macro-category

Macro-category	Sub-category	Activity
Sleeping, eating, personal care		Sleeping, staying in bed (including for illness)
Sleeping, eating, personal care		Insomnia, tossing and turning in bed
Sleeping, eating, personal care		Eating and Drinking
Sleeping, eating, personal care		Washing, dressing, combing hair
Sleeping, eating, personal care		Going to the doctor/dentist
Sleeping, eating, personal care		Other personal care activities (please specify, e.g., barber, hairdresser etc.)
Work/study activities		Work (including training, breaks, travel)
Work/study activities		Remote working
Work/study activities		School/university (lessons, individual study)
Work/study activities		Other work and/or study activities (please specify)
Household activities		Cooking and other activities related to preparing meals
Household activities		Cleaning, tidying, or home maintenance
Household activities		Activities related to clothing care (washing, ironing, etc.)
Household activities		Gardening or pet-care activities
Household activities		Building/repairing of household items
Household activities		Shopping and/or buying household items or services
Household activities		Family and home management and administration (planning visits, doing accounts, etc.)
Household activities		Other types of household activities (please specify)
Childcare	Support and care	Putting to bed/waking up
Childcare	Support and care	Helping to eat/drink
Childcare	Support and care	Helping to bathe/get dressed/hair/get ready
Childcare	Support and care	Other kinds of support and care (please specify)
Childcare	Reading or writing	Reading
Childcare	Reading or writing	Listening to your child reading
Childcare	Reading or writing	Teaching how to read, write, count
Childcare	Reading or writing	Other writing/reading activities with your children (please specify)
Childcare	Playing	Playing outdoors
Childcare	Playing	Going to the playground
Childcare	Playing	Playing Indoor
Childcare	Playing	Playing board games
Childcare	Playing	Playing with dolls and puppets
Childcare	Playing	Playing with toy cars or similar
Childcare	Playing	Playing videogames
Childcare	Playing	Playing role or dressing-up
Childcare	Playing	Dancing, having fun
Childcare	Playing	Playing creative games
Childcare	Playing	Other kinds of games (please specify)
Childcare	Leisure and Culture	Watching cartoons with your children
Childcare	Leisure and Culture	Watching films/cartoons at the cinema with your children
Childcare	Leisure and Culture	Visiting museums or exhibitions
Childcare	Leisure and Culture	Watching shows and performances
Childcare	Leisure and Culture	Visiting the zoo with your children
Childcare	Leisure and Culture	Listening to music, singing, playing an instrument
Childcare	Leisure and Culture	Watching DVDs, films, television series or programmes with your children
Childcare	Leisure and Culture	Surfing the internet with your children
Childcare	Leisure and Culture	Other leisure/cultural activities with your children (please specify)
Childcare	Manual recreational activities	Colouring and drawing
Childcare	Manual recreational activities	Making a collage
Childcare	Manual recreational activities	Painting
Childcare	Manual recreational activities	Modelling
Childcare	Manual recreational activities	Other manual recreational activities with your children (please specify)
Childcare	Outdoor activities and sport with your child	Walking, hiking
Childcare	Outdoor activities and sport with your child	Teaching a new sport
Childcare	Outdoor activities and sport with your child	Cycling
Childcare	Outdoor activities and sport with your child	Going to the park
Childcare	Outdoor activities and sport with your child	Other outdoor activities or sport with your children (please specify)
Childcare	Indoor activities and sport with your child	Going to the swimming pool
Childcare	Indoor activities and sport with your child	Other indoor activities or sport with your children (please specify)
Childcare	Speaking and listening	Telling fairy tales
Childcare	Speaking and listening	Speaking face to face with your children
Childcare	Speaking and listening	Speaking via live chat, by phone, or SMS with your children
Childcare	Speaking and listening	Giving instructions
Childcare	Speaking and listening	Scolding your children
Childcare	Speaking and listening	Listening to your children talk about his/her day or other things that have happened
Childcare	Speaking and listening	Other activities involving speaking with or listening to your child (please specify)
Childcare	Organisation, supervision, travel for care and accompaniment	Planning activities and/or events (e.g., birthday parties)
Childcare	Organisation, supervision, travel for care and accompaniment	Helping your children to pack his/her rucksack
Childcare	Organisation, supervision, travel for care and accompaniment	Helping your children to tidy up his/her things
Childcare	Organisation, supervision, travel for care and accompaniment	Supervising your children without interacting
Childcare	Organisation, supervision, travel for care and accompaniment	Watching your children while he/she does other activities (swimming, sport, playing with other children etc.)
Childcare	Organisation, supervision, travel for care and accompaniment	Waiting for your children (outside school, after sport etc.)
Childcare	Organisation, supervision, travel for care and accompaniment	Travel due to accompanying your children for care
Childcare	Organisation, supervision, travel for care and accompaniment	Other children organisation and supervision-related activities (please specify)
Childcare	School, religion, extracurricular activities	Helping with homework
Childcare	School, religion, extracurricular activities	Correcting Homework
Childcare	School, religion, extracurricular activities	Teaching your children subjects related to school education
Childcare	School, religion, extracurricular activities	Discussions with your children's teachers or with other adults in official roles
Childcare	School, religion, extracurricular activities	Other activities related to your children's school (please specify)
Childcare	School, religion, extracurricular activities	Activities related to your children's religious education (please specify)
Childcare	School, religion, extracurricular activities	Activities related to your children's extracurricular courses (please specify)
Childcare	School, religion, extracurricular activities	Activities related to children's clubs or volunteering (e.g., scouts) (please specify)
Childcare	School, religion, extracurricular activities	Other (please specify)
Childcare	Medical care for your children	Disinfecting or applying bandages to a wound on your children
Childcare	Medical care for your children	Accompanying your children to a medical appointment
Childcare	Medical care for your children	Speaking to your children's doctor
Childcare	Medical care for your children	Other kinds of medical support for your children (please specify)
Support for others/club/volunteering		Volunteering through an organisation
Support for others/club/volunteering		Helping other family members
Support for others/club/volunteering		Informally helping people who do not belong to your family
Support for others/club/volunteering		Religious activities, prayer, ceremonies, visits to the cemetery
Support for others/club/volunteering		Gatherings, organised meetings
Support for others/club/volunteering		Other activities of support for others/club/volunteering (please specify)

Note:

Macro-category	Sub-category	Activity
Social life and entertainment		Making or receiving visits to/from relatives/adult friends
Social life and entertainment		Making or receiving visits to/from children
Social life and entertainment		Taking part in children's parties (birthday parties etc.) as an accompanying adult
Social life and entertainment		Other kind of parties
Social life and entertainment		Going to the restaurant, bar, pub, disco
Social life and entertainment		Speaking face to face
Social life and entertainment		Talking on the phone, live chat, or SMS
Social life and entertainment		Going to the cinema, theatre, concerts, library (not to study)
Social life and entertainment		Going to sporting events
Social life and entertainment		Visiting the zoo
Social life and entertainment		Listening to music or playing an instrument
Social life and entertainment		Other entertainment activities (please specify)
Sport and outdoor activities		Walking, hiking
Sport and outdoor activities		Practising ball sports
Sport and outdoor activities		Cycling
Sport and outdoor activities		Swimming
Sport and outdoor activities		Gym, Fitness
Sport and outdoor activities		Hunting, Fishing
Sport and outdoor activities		Other sporting activities (please specify)
Hobbies and pastimes		Artistic or creative pursuits
Hobbies and pastimes		IT and/or programming
Hobbies and pastimes		Internet communication, acquiring information via the internet
Hobbies and pastimes		Other computer use (please specify)
Hobbies and pastimes		Videogames
Hobbies and pastimes		Gambling
Hobbies and pastimes		Other hobbies and pastimes (please specify)
TV, reading, communication and mass media		Reading newspapers and magazines
TV, reading, communication and mass media		Reading books
TV, reading, communication and mass media		Watching television programmes, films, or videos
TV, reading, communication and mass media		Listening to the radio or podcasts
TV, reading, communication and mass media		Other (please specify)
Travel		Travel to/from place of work/study
Travel		Travel to do the shopping and/or make other purchases
Travel		Travel due to accompanying your children for care
Travel		Travel to care for adult members of your family
Travel		Travel for volunteering/participatory activities
Travel		Travel for socialising and/or entertainment
Travel		Travel because of transfer
Travel		Leisure travel
Travel		Other (please specify)
Other		Relaxing, waiting, not doing anything
Other		Other Don't know, don't remember
Other		Other activity not listed (please specify)

Note: The activities included in the definition of *Quality Time* are highlighted, based on the guidelines suggested by Price (2008).

Online Appendix C Comparison with recent app-based or web-based time-use surveys

Table C.1 displays the main features of our app and of recent app-based or web-based time-use surveys. Among the app-based we include: ETUS (Bonke and Christensen, 2019; Denmark), MCS Age 14 (Chatzitheochari et al., 2018; UK), and the Netherlands Institute for Social Research (Fernee and Sonck, 2014; Netherlands). Among those web-based we consider the web version of ETUS and MCS Age 14, and three additional surveys: MOTUS (Minnen et al., 2014; Belgium), CaDDI (Sullivan et al., 2020; various countries), and CaDDI Italy (taken from the previous study). These surveys differ from each other in many respects, so that comparison of these figures requires great caution. MinUTo’s performance aligns with expectations based on the results of previous studies in terms of response rate and average number of episodes, with an average number of episodes being slightly higher than the one obtained in the recent Danish survey ETUS (14 episodes on average). However, is important to keep in mind that the MinUTo sample was a convenience sample and that our instrument was part of a larger project, including an intervention.³

Table C.1: Comparison with other Web or App-based surveys

	Resp. Rate	Participants	Valid Diaries	Episodes ^e
<i>MinUTo</i> ^a - App	59%	863	837 (87%)	17
<i>ETUS</i> ^b - App	37%	10913	233 ^d	14
<i>MCS Age 14</i> - App	48%	40	33 (83%)	22*
<i>Netherlands Inst. for Social Research</i> ^c - App	-	92	83 (90%)	27
<i>ETUS</i> ^b - Web	37%	10913	2227 ^d	11
<i>MCS Age 14</i> - Web	33%	27	26 (97%)	26*
<i>MOTUS</i> - Web	52%	≈12,500	-	18*
<i>CaDDI</i> - Web	-	-	≈10,000	16 (14*)
<i>CaDDI - Italy</i> - Web	-	-	-	19 (15*)

Note: Response rate is computed as the ratio between respondents and the number of initial participants (individuals agreeing to complete the diary).

^a For *MinUTo*, the response rate is calculated as valid diaries divided by total enrolled parents.

^b The response rates for *ETUS* include all diary modes (app, web, paper).

^c Data from the Netherlands Institute for Social Research refers specifically to Pilot 1 (2011).

^d The percentage of valid diaries for *ETUS* is not reported separately by mode, as participants could choose among multiple diary modes.

^e Episodes represent continuous periods of time with no changes in the main activity or in contextual information (e.g. secondary activities, presence of others). When episodes instead refer only to primary activities, irrespective of other information, numbers are marked with an asterisk.

³Although both MCS at age 14 and the app developed by the Netherlands Institute for Social Research show a higher number of episodes, their findings are based on a very limited sample. In addition, these studies are less comparable to MinUTo: The MCS Age 14 is only addressed to teenagers, while the Netherlands study adopts a very pro-active way of administering the questionnaire, with pop-up questions and continuous access to a help desk.

The considered studies differ in many respect, from the type of sample they collected to the instrument design. They can be shortly described as follows.

- **ETUS** (Bonke and Christensen, 2019). The Danish 2017-2018 Time-Use Survey offered respondents the choice between a dedicated app and a web-based version, both using a modular survey-style design. Participants could select from 60 predefined activities. Approximately three-fourths of respondents were eligible for incentive prizes via a lottery system. Participation was voluntary, targeting young residents in Denmark.
- **MCS Age 14** (Chatzitheochari et al., 2018). Pilot survey of 86 participants (adolescents) who were asked to choose between a web-administered diary through a visual interface and a smartphone survey-style app. The diary is a light form of the *MCS Age 14* 2016, with 44 age-specific activities, nested under 13 broad categories. 83% of app diaries were of *good quality*, i.e., they did not include more than 90 min of missing main activity time, reported at least 7 episodes and at least 3/4 of basic activity daily domains. The analysis did not reveal significant sociodemographic differences among those using paper diaries, web diaries, and app-based diaries.
- **Netherlands Institute for Social Research** (Fernee and Sonck, 2014). They used a downloadable survey-style app, with 41 predetermined hierarchically ranked activities. Among the 150 participants, 50 used borrowed phones. Due to data collection across four pilot waves, response rates could not be precisely calculated. Participants reported an average of 27 episodes, possibly explained by a more intrusive way of delivering the questionnaire, with pop-up questions after 2 hours of no-access to the diary. Moreover, they provided a continuous helpdesk for any possible incurring problem. Data for episodes count are from pilot wave 1, where 100 people were invited to submit time-use diaries. For the selection of the participants, the goal was to achieve comparable distributions of background variables such as age, gender, and education.
- **MOTUS** (Minnen et al., 2014). Online modular approach diary with a 3-level tree structure or an alternative *search* method for finding activities. This extensive 7-day diary allowed users to select from over 225 activities. Of those invited, 31.5% completed the survey, representing 52% of those who started it. The study involved approximately 40,000 individuals aged 18 to 75 residing in Flanders, Belgium. The sample was randomly drawn from the population register. The survey was conducted in parallel with the 2013 paper-based time-use survey of the population, carried out by the Belgian National Institute of Statistics.
- **CaDDI** (Sullivan et al., 2020). A development of a *light* form of the UKTUS 2015 diary, implemented in 9 different countries. Thanks to a visual interface, survey

respondents selected activities with a pointer that is dragged across a horizontal timeline bar (*click-and-drag* survey instrument). The data was collected using an international online market research panel. The sample was stratified based on sociodemographic factors such as age, gender, education, and occupation, to reflect nationally representative quotas.

Online Appendix D Data quality details and final sample description

Table D.1: Time Diaries' Cleaning Process

	First day	Second day	Total
<i>Original No. of diaries</i>	509	454	963
<i>Diaries ≤ 5 episodes</i>	31	22	53 (5.5%)
<i>Incomplete diaries (≤ 24 hours)</i>	38	25	63 (6.5%)
<i>Outliers</i>	1	1	2 (0.2%)
<i>Technical problems</i>	5	3	8 (0.8%)
<i>Total dropped diaries</i>	75	51	126 (13.1%)
<i>Final No. of diaries (separate)</i>	434	403	837
<i>Final No. of diaries (combined)</i>			837
<i>Final No. of diaries' respondents</i>			517
<i>Weekday diaries</i>			406
<i>Weekend day diaries</i>			431
<i>Diaries in both types of day</i>			320

Table D.2: Average Number of Episodes Per Day

	Mean	Sd	Med	Min	Max	N
<i>Episodes (All)</i>	16.92	(6.06)	16.08	5	53	517
<i>Episodes (Mothers)</i>	17.15	(6.08)	16.46	5	53	444
<i>Episodes (Fathers)</i>	15.49	(5.78)	15	5	34	73
<i>Episodes (University Education)</i>	17.30	(6.19)	16.6	5	53	364
<i>Episodes (High-School Education)</i>	16.12	(5.80)	15.72	5	37	154
<i>Episodes (Full-time)</i>	16.36	(5.94)	16	5	53	334
<i>Episodes (Part-time)</i>	17.93	(6.15)	17	7	37	183

Note: Number of reported episodes per day (average between weekend and weekday diaries). University Education: parent achieved at least a university degree; High-School Education: parent achieved at most high school degree; Full(Part)-time: parent works full(part)-time.

Table D.3: Sample Selection

	MinUTo Sample
<i>Original No. of diaries</i>	837
<i>Original No. of respondents</i>	517
<i>Missing info on Parent 1 Employment</i>	1
<i>Missing info on Parent 2</i>	7
<i>Missing info on Parent 2 Gender</i>	4
<i>Missing info on Parent 1 Age</i>	3
<i>Missing info on No. of Children</i>	1
<i>No. of diaries</i>	812
<i>Final No. of respondents</i>	501
<i>Weekday diaries</i>	392
<i>Weekend day diaries</i>	420
<i>Diaries in both types of day</i>	311

Table D.4: Descriptives Statistics - Respondents' Socio-economic and Demographic Variables - MinUTo Sample

	Mean	Sd	Med	Min	Max	N
Respondent Parent						
<i>Female</i>	0.86	(0.34)	1	0	1	501
<i>Age</i>	39.66	(4.55)	39	23	58	501
<i>Italian Nationality</i>	0.93	(0.25)	1	0	1	501
<i>University Education</i>	0.71	(0.46)	1	0	1	501
<i>High-School Education</i>	0.28	(0.45)	0	0	1	501
<i>Employed</i>	0.93	(0.26)	1	0	1	501
<i>Full-time</i>	0.65	(0.48)	1	0	1	501
<i>Part-time</i>	0.28	(0.45)	0	0	1	501
Respondent Parent's Partner						
<i>Female</i>	0.14	(0.34)	0	0	1	501
<i>Age</i>	41.49	(5.16)	41	29	57	501
<i>Italian Nationality</i>	0.95	(0.21)	1	0	1	501
<i>University Education</i>	0.54	(0.50)	1	0	1	501
<i>High-School Education</i>	0.38	(0.49)	0	0	1	501
<i>Employed</i>	0.98	(0.14)	1	0	1	501
<i>Full-time</i>	0.92	(0.27)	1	0	1	501
<i>Part-time</i>	0.06	(0.24)	0	0	1	501
Family Characteristics						
<i>Child Gender: Female</i>	0.47	(0.50)	0	0	1	501
<i>Child Age</i>	4.29	(0.46)	4	4	5	501
<i>Number of Children</i>	1.66	(0.60)	2	1	3	501
<i>Single Child</i>	0.40	(0.49)	0	0	1	501

Note: This table shows summary statistics for a number of key socio-economic and demographic variables. University Education: parent achieved at least a university degree; High-School Education: parent achieved at most high school degree; Full(Part)-time: parent works full(part)-time; Number of Children: number of children in the family.

Table D.5: Descriptives Statistics - Socio-economic and Demographic Variables - MinUTo Sample vs ISTAT Sample and SHIW Sample. Mean (Sd)

	MinUTo	Mothers ISTAT	SHIW	MinUTo	Fathers ISTAT	SHIW
<i>Age</i>	39.25 (4.21)	37.39 (5.65)	38.75 (4.47)	42.24 (5.64)	39.88 (8.03)	42.61 (6.26)
<i>Nationality</i>						
<i>Italian</i>	0.93 (0.26)	0.79 (0.40)	0.83 (0.38)	0.97 (0.17)	0.83 (0.39)	0.86 (0.34)
<i>Education</i>						
<i>≥ University</i>	0.72 (0.45)	0.28 (0.45)	0.38 (0.49)	0.62 (0.49)	0.19 (0.39)	0.27 (0.44)
<i>High-School</i>	0.26 (0.44)	0.49 (0.50)	0.40 (0.49)	0.34 (0.48)	0.47 (0.50)	0.44 (0.50)
<i>Employed</i>	0.92 (0.27)	0.70 (0.46)	0.76 (0.43)	0.99 (0.12)	0.95 (0.22)	0.96 (0.20)
N	433	571	168	68	531	168

Note: The descriptive statistics come from different samples. Column (1) refers to descriptives of the sample used in the paper. Column (2) presents descriptive statistics based on the 2013 ISTAT’s *Multipurpose Survey on Households*, whose data were released in July 2018 and are the most recent available. We selected a subsample of the ISTAT sample, to make it as comparable as possible to the MinUTo sample. Specifically, ISTAT’s diaries were selected according to the following respondents’ characteristics (and in the following order): (i) households with a single family unit; (ii) households with at least one child; (iii) households with a child aged from 3 to 5 years-old (included); (iv) only parents as respondents; (v) only mothers as respondents; (vi) only mothers who live in North or Central Italy. We keep data from North and Central Italy to reach a sufficient sample size for the time-use data comparisons (see next section in the Appendix). Column (3) reports descriptive statistics based on a nationally representative survey run by the Bank of Italy - the Survey on Household Income and Wealth (SHIW). We pool data from the surveys of 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016 and 2020 and restrict the sample to household from Northern and Central Italian regions (to mimic the sample selection for the ISTAT time use survey), living in large municipalities, with at least one cohabiting child aged 4 or 5. The unit of observation for SHIW is the household and information on all household members is collected from the head of the household. We report information from the households for whom there are no missing data on either partner.

Online Appendix E Comparison with ISTAT time-use data

Here, we compare the time-use patterns estimated in our sample, which we name MinUTo sample, with those from the time-use data collected in 2013-2014 by the ISTAT’s *Multipurpose Survey on Households*, which were released in July 2018 and are the most recently available. We selected a subsample of the ISTAT sample, to make it as comparable as possible to the MinUTo sample. Specifically, ISTAT’s diaries were selected according to the following respondents’ characteristics (and in the following order): (i) households with a single family unit; (ii) households with at least one child; (iii) households with a child aged from 3 to 5 years-old (included); (iv) only parents as respondents; (v) only mothers as respondents; (vi) only mothers who live in North or Central Italy. For the sake of comparison, we focus on the subsample of the respondent mothers in the MinUTo study. The two samples we compare are described in Table D.5, which shows that, even after the selection we applied to the ISTAT sample, MinUTo’s mothers have much higher levels of education and employment, and they are more often of Italian nationality with respect to their ISTAT sample counterparts.⁴

To perform meaningful comparisons, we rearranged the activities of the MinUTo diary into macro-categories that could match as close as possible those usually retrieved from the ISTAT time-use data (see, for example, Barigozzi et al., 2023). Since the macro-category *Childcare* in MinUTo is made up of more detailed activities than in ISTAT (the structure is three-levels in MinUTo versus two-levels in ISTAT), the mapping for *Childcare* required some attention.⁵

Tables E.1 and E.2 show that during both weekdays and weekend days there is a statistically significant (two-sample t-test) and sizeable difference between time spent on average in Paid Work, Unpaid Work and Childcare across the two samples, with MinUTo displaying higher Paid Work in weekdays, lower Unpaid Work in both types of days, and higher Childcare in both types of days. However, when we control for the remarkable difference in educational level and select only mothers with university education in both samples, all the above-mentioned distances between the two samples become smaller (see Tables E.3 and E.4). In particular, the difference in Childcare becomes not significant and

⁴We reach a similar conclusion comparing observables from the sample of participants to MinUTo and a sample extracted from the nationally representative survey run by the Bank of Italy, i.e. the Survey on Household Income and Wealth.

⁵We split the MinUTo *Childcare* macro-category in two: *Childcare Istat* and *Childcare Other*. The former includes all those activities that we were able to map one to one between the two surveys (i.e. *support and care, reading or writing, playing, speaking or listening to, organization and supervision, included travel*). In *Childcare Other*, reversely, we included the time spent on activities for which we could not find an exact match in the ISTAT diary. These are: *Leisure and Cultural activities, Manual Recreational activities, Outdoor and Indoor Sports and activities, Activities related to School, Religious education, Extra-curricular courses (except helping with homework), Medical care*.

shrinks from about 29 to about 24 minutes during weekdays and from 40 to 21 minutes during weekend days. Overall, we interpret this finding as indicating that our app-based time diary survey is able to reproduce time allocation patterns which are compatible with those observed from a nationally representative sample.

Table E.1: Mothers' Time (Minutes) - Weekday

	MinUTo	ISTAT North & Central
Paid Work***		
Mean	366.97 (207.21)	246.34 (243.01)
Max	790	876
Unpaid Work***		
Mean	129.97 (99.52)	223.88 (138.90)
Max	490	606
Childcare Istat*		
Mean	200.71 (121.73)	171.77 (110.32)
Max	1050	696
Childcare Other		
Mean	25.79 (55.68)	
Max	580	
Self-care***		
Mean	119.02 (69.01)	152.67 (58.95)
Max	390	462
Sleeping		
Mean	478.01 (100.81)	487.57 (68.62)
Max	1100	762
Voluntary Work		
Mean	6.20 (38.69)	5.59 (31.01)
Max	520	336
Leisure***		
Mean	99.44 (87.04)	149.96 (116.17)
Max	430	576
Other		
Mean	6.88 (24.56)	
Max	240	
N	337	191

Standard deviation in parentheses. P-values for two-sample t-test of equality of means: *** p<0.01, ** p<0.05, * p<0.1

Table E.2: Mothers' Time (Minutes) - Weekend Day

	MinUTo	ISTAT North & Central
Paid Work		
Mean	62.26 (146.45)	75.28 (177.54)
Max	750	1008
Unpaid Work***		
Mean	173.99 (125.42)	254.67 (147.79)
Max	590	654
Childcare Istat***		
Mean	186.42 (139.97)	146.70 (127.01)
Max	840	684
Childcare Other		
Mean	57.22 (82.68)	
Max	510	
Self-care***		
Mean	151.54 (88.87)	181.23 (78.68)
Max	570	486
Sleeping***		
Mean	554.90 (131.17)	537.11 (91.40)
Max	1300	924
Voluntary Work*		
Mean	4.52 (27.21)	12.00 (35.62)
Max	330	276
Leisure		
Mean	227.41 (160.33)	231.11 (150.74)
Max	660	810
Other		
Mean	9.97 (31.12)	
Max	270	
N	363	380

Standard deviation in parentheses. P-values for two-sample t-test of equality of means: *** p<0.01, ** p<0.05, * p<0.1

Table E.3: Highly Educated Mothers' Time (Minutes) - Week-day

	MINUTO	ISTAT North & Central
Paid Work*		
Mean	391.27 (196.25)	336.53 (249.44)
Max	720	852
Unpaid Work**		
Mean	120.82 (95.60)	169.61 (129.65)
Max	490	552
Childcare Istat		
Mean	194.04 (105.43)	169.82 (123.81)
Max	600	696
Childcare Other		
Mean	26.90 (61.37)	
Max	580	
Self-care***		
Mean	118.41 (69.24)	156.54 (60.93)
Max	390	312
Sleeping		
Mean	476.57 (104.84)	478.07 (64.03)
Max	1100	606
Voluntary Work		
Mean	7.76 (44.77)	3.75 (21.02)
Max	520	144
Leisure**		
Mean	90.24 (79.15)	124.07 (91.17)
Max	430	444
Other		
Mean	5.84 (20.08)	
Max	140	
N	245	56

Standard deviation in parentheses. P-values for two-sample t-test of equality of means: *** p<0.01, ** p<0.05, * p<0.1

Table E.4: Highly Educated Mothers' Time (Minutes) - Week-end Day

	MinUTo	ISTAT North & Central
Paid Work		
Mean	67.14 (150.64)	67.86 (158.70)
Max	750	744
Unpaid Work**		
Mean	165.34 (119.48)	233.49 (132.10)
Max	550	576
Childcare Istat		
Mean	183.85 (129.03)	162.45 (134.01)
Max	720	684
Childcare Other		
Mean	59.16 (84.63)	
Max	510	
Self-care***		
Mean	150.65 (87.80)	185.77 (82.31)
Max	570	420
Sleeping***		
Mean	556.90 (129.36)	530.09 (79.81)
Max	1300	768
Voluntary Work*		
Mean	4.47 (24.03)	14.66 (42.14)
Max	250	276
Leisure		
Mean	231.76 (162.01)	244.01 (148.38)
Max	640	612
Other		
Mean	10.34 (33.33)	
Max	270	
N	262	106

Standard deviation in parentheses. P-values for two-sample t-test of equality of means: *** p<0.01, ** p<0.05, * p<0.1

Online Appendix F Time investments by macro-category and activity

Table F.1: Average Time Investments by Macro-category (Minutes)- Weekday

	Total	Quality	Engaged	Positive
Personal Care	65.64	49.23	56.96	31.04
Work/study activities	12.93	0.00	3.21	2.09
Household activities	46.17	0.00	22.21	12.96
Childcare	172.93	145.59	165.94	3.26
Support for others/club/volunteering	1.94	1.76	1.76	1.50
Social life and entertainment	8.47	0.51	8.06	6.96
Sport and outdoor activities	1.51	1.51	1.51	1.30
Hobbies and pastimes	3.19	2.37	2.53	2.09
Communication and mass media	20.36	1.45	18.83	12.22
Travel	18.49	0.00	16.86	8.39
Other	1.07	0.00	0.92	0.61

Note: This table shows the average of each measure of parental time investments along all macro-categories in a weekday (N=392).

Table F.2: Average Time Investments by Macro-category (Minutes) - Weekend day

	Total	Quality	Engaged	Positive
Personal Care	121.05	102.33	114.12	65.14
Work/study activities	3.76	0.00	0.43	0.43
Household activities	79.14	0.00	40.02	22.29
Childcare	218.69	198.38	213.76	150.49
Support for others/club/volunteering	2.60	1.64	1.64	1.10
Social life and entertainment	74.64	19.74	73.86	66.26
Sport and outdoor activities	16.95	16.36	16.36	8.90
Hobbies and pastimes	16.95	16.36	16.36	8.90
Communication and mass media	43.71	3.95	39.95	28.86
Travel	34.00	0.00	28.07	1.52
Other	3.12	0.00	2.36	1.69

Note: This table shows the average of each measure of parental time investments along all macro-categories in a weekend day (N=420).

Table F.3: Average Time Investments by Activity (Minutes) - Weekday

	Total	Quality	Engaged	Positive
Personal Care				
<i>Sleeping</i>	241.58	0	0	0
<i>Insomnia</i>	2.98	0	0	0
<i>Eating or drinking</i>	52.09	49.23	49.23	44.84
<i>Washing, dressing</i>	10.30	0	7.44	5.49
<i>Going to the doctor</i>	0.25	0	0	0
<i>Other</i>	0	0	0	0
Work/study activities				
<i>Work</i>	3.82	0	1.76	0.99
<i>Remote work</i>	8.87	0	1.22	1.22
<i>School/University</i>	0.22	0	0	0
<i>Other</i>	0	0	0	0
Household activities				
<i>Cooking</i>	24.84	0	14.05	13.92
<i>Cleaning</i>	13.13	0	3.23	2.27
<i>Clothing care</i>	2.39	0	0	0
<i>Gardening or pet-care</i>	0.25	0	0	0
<i>Building/repairing</i>	0.15	0	0	0
<i>Shopping</i>	2.70	0	2.55	2.55
<i>Family and home manag.</i>	1.76	0	0.8	0.8
<i>Other</i>	1.07	0	0.8	0.8

Note: This table shows the average of each measure of parental time investments along all activities in a weekday (N=392).

	Total	Quality	Engaged	Positive
Childcare - Support and care				
<i>Putting to bed or waking</i>	25.86	24.38	24.38	19.43
<i>Helping to eat/drink</i>	12.80	12.21	12.21	9.82
<i>Helping to bathe or get dressed</i>	26.22	25.68	25.68	18.26
<i>Other</i>	1.78	1.47	1.47	0.5
Childcare - Reading or writing with child				
<i>Reading with child</i>	9.03	9.03	9.03	8.91
<i>Listening to child reading</i>	0	0	0	0
<i>Teaching how to read or write</i>	1.05	1.05	1.05	0.99
<i>Other</i>	0.17	0	0	0
Childcare - Playing with child				
<i>Playing with child outdoors</i>	2.14	2.14	2.14	2.14
<i>Going to the playground</i>	0.81	0.81	0.81	0.81
<i>Playing with child indoors</i>	16.58	16.58	16.58	16.02
<i>Playing games sitting down</i>	7.5	7.5	7.5	7.5
<i>Playing with dolls</i>	3.77	3.77	3.77	3.77
<i>Playing with model trains, cars</i>	4.18	4.18	4.18	4.18
<i>Playing video games with your child</i>	0.25	0.25	0.25	0.25
<i>Acting out roles or dressing up</i>	1.86	1.86	1.86	1.86
<i>Dancing, laughing, joking with your child</i>	5.79	5.79	5.79	5.79
<i>Playing at creative or building games</i>	6.91	6.91	6.91	6.91
<i>Other</i>	0.22	0	0	0
Childcare - Leisure and cultural activities				
<i>Watching cartoons</i>	3.90	0	3.90	3.90
<i>Watching movies at the cinema</i>	0.10	0	0	0
<i>Visiting museums</i>	0.43	0.43	0.43	0.43
<i>Watching shows</i>	0.81	0.81	0.81	0.81
<i>Going to the zoo</i>	0	0	0	0
<i>Listening to music or singing</i>	0.35	0.35	0.35	0.35
<i>Watching DVDs, films, tv series</i>	1.27	0	1.27	1.27
<i>Surfing the internet</i>	0	0	0	0
<i>Other</i>	0.25	0.25	0.25	0.25
Childcare - Manual recreational activities				
<i>Colouring and drawing</i>	2.72	2.72	2.72	2.72
<i>Making a collage</i>	0.43	0.43	0.43	0.43
<i>Painting</i>	0.48	0.48	0.48	0.48
<i>Model making</i>	0	0	0	0
<i>Other</i>	1.96	1.96	1.96	1.96
Childcare - Outdoor activities and sport				
<i>Walking, strolling or hiking</i>	0.76	0.76	0.76	0.76
<i>Teaching a sport</i>	0.22	0.22	0.22	0.22
<i>Cycling together</i>	0.10	0.10	0.10	0.10
<i>Going to the park</i>	1.60	1.47	1.47	1.47
<i>Other</i>	0.68	0.68	0.68	0.68
Childcare - Indoor activities and sport				
<i>Swimming pool</i>	1.30	1.30	1.30	1.30
<i>Other</i>	0.43	0.43	0.43	0.43
Childcare - Speaking or Listening				
<i>Telling stories or fables</i>	0.96	0.96	0.96	0.96
<i>Speaking face to face</i>	2.16	2.09	2.09	2.09
<i>Speaking via live chat, phone, SMS</i>	0	0	0	0
<i>Giving instructions</i>	0.07	0	0	0
<i>Scolding your child</i>	0	0	0	0
<i>Listening to your child</i>	4.33	4.33	4.33	4.23
<i>Other</i>	0.02	0	0	0
Childcare - Organisation and supervision				
<i>Planning activities</i>	0.17	0	0	0
<i>Helping to pack</i>	0.07	0	0	0
<i>Helping to tidy up</i>	0.30	0	0.31	0.28
<i>Supervising your child</i>	0.74	0	0.74	0.61
<i>Watching your child</i>	2.04	0	2.04	1.86
<i>Waiting for your child</i>	0.81	0	0.79	0.69
<i>Travel due to accompanying your child</i>	10.63	0	8.95	8.13
<i>Other</i>	0.33	0	0.33	0.33
Childcare - Activities related to school, religious educ., extracurricular				
<i>Helping with homework</i>	1.47	0.43	0.43	0.15
<i>Checking/correcting homework</i>	0	0	0	0
<i>Teaching subjects</i>	0	0	0	0
<i>Discussion with teachers</i>	0.17	0	0.18	0.02
<i>Other act. related to school</i>	0	0	0	0
<i>Other act. related to relig. educ.</i>	0	0	0	0
<i>Other extracurricular act.</i>	0.71	0.71	0.71	0.71
<i>Other activities related to volunteering</i>	0	0	0	0
<i>Other</i>	0	0	0	0
Childcare - Medical care				
<i>Disinfecting or applying bandages</i>	0	0	0	0
<i>Accompanying to a medical appointment</i>	0.63	0	0.63	0.41
<i>Talking to child's doctor</i>	0.07	0	0	0
<i>Other</i>	1.68	0	0.94	0.61

Note: This table shows the average of each measure of parental time investments, along all activities in a weekday (N=392).

	Total	Quality	Engaged	Positive
Support for others/club/volunteering				
<i>Volunteering</i>	0.17	0	0	0
<i>Helping adult family members</i>	0	0	0	0
<i>Informally helping people</i>	1.30	1.30	1.30	1.30
<i>Religious activities</i>	0.28	0.28	0.28	0.28
<i>Gatherings and organised meetings</i>	0.15	0.15	0.15	0.15
<i>Other</i>	0.02	0	0	0
Social life and entertainment				
<i>Making or receiving visits from adults</i>	3.85	0	3.85	3.85
<i>Making or receiving visits from children</i>	1.22	0	1.22	1.22
<i>Taking part in children parties</i>	0.33	0	0.33	0.33
<i>Other kinds of parties</i>	0.33	0	0.33	0.33
<i>Going to the restaurant, pub, disco</i>	1.02	0	1.02	1.02
<i>Speaking face to face</i>	0.33	0	0.15	0
<i>Talking on the phone, chat, SMS</i>	0.58	0	0.35	0.35
<i>Going to the cinema, theatre, concerts</i>	0.43	0	0.43	0.43
<i>Going to sport events</i>	0	0	0	0
<i>Going to the zoo</i>	0	0	0	0
<i>Listening to music or playing an instrument</i>	0.35	0.35	0.35	0.35
<i>Other</i>	0	0	0	0
Sport and outdoor activities				
<i>Walking or hiking</i>	0.96	0.96	0.96	0.92
<i>Playing ball games</i>	0	0	0	0
<i>Cycling</i>	0.23	0.23	0.23	0.23
<i>Swimming</i>	0	0	0	0
<i>Fitness, gym</i>	0.30	0.30	0.30	0.30
<i>Fishing, hunting, fruit picking</i>	0	0	0	0
<i>Other</i>	0	0	0	0
Hobbies and pastimes				
<i>Artistic or creative pursuits</i>	2.16	2.04	2.04	1.78
<i>Programming</i>	0	0	0	0
<i>Internet</i>	0.25	0	0	0
<i>Other computer use</i>	0.28	0	0	0
<i>Videogames</i>	0.15	0	0.15	0.15
<i>Gambling</i>	0	0	0	0
<i>Other</i>	0.33	0.33	0.33	0.33
Communication and mass media				
<i>Reading newspapers and magazines</i>	0.15	0	0	0
<i>Reading books</i>	1.86	1.45	1.45	1.45
<i>Watching television programmes, films, videos</i>	18.34	0	17.37	16.81
<i>Listening to radio and podcast</i>	0	0	0	0
<i>Other</i>	0	0	0	0
Travel				
<i>Travel to/from work</i>	1.91	0	1.83	1.65
<i>Travel to do shopping</i>	0.94	0	0.94	0.89
<i>Travel for childcare</i>	10.58	0	10.10	9.05
<i>Travel for family care</i>	0.25	0	0.25	0.25
<i>Travel for volunteering</i>	0	0	0	0
<i>Travel for socialising</i>	1.07	0	0.61	0.61
<i>Travel for transfer</i>	0.05	0	0	0
<i>Leisure travel</i>	2.47	0	1.98	1.65
<i>Other</i>	1.19	0	1.07	1.07
Travel				
<i>Relaxing, waiting, doing nothing</i>	0.71	0	0.63	0.58
<i>Don't know or don't remember</i>	0.25	0	0.17	0.17
<i>Other activity not listed</i>	0.10	0	0.10	0

Note: This table shows the average of each measure of parental time investments, along all activities in a weekday (N=392).

Table F.4: Average Time Investments by Activity (Minutes) - Weekend day

	Total	Quality	Engaged	Positive
Personal Care				
<i>Sleeping</i>	328.5	0	0	0
<i>Insomnia</i>	1.23	0	0	0
<i>Eating or drinking</i>	106.23	102.33	102.33	93.28
<i>Washing, dressing</i>	13.57	0	11.14	7.78
<i>Going to the doctor</i>	0	0	0	0
<i>Other</i>	0	0	0	0
Work/study activities				
<i>Work</i>	1.28	0	0	0
<i>Remote work</i>	1.02	0	0	0
<i>School/University</i>	0.88	0	0.42	0.42
<i>Other</i>	0.57	0	0	0
Household activities				
<i>Cooking</i>	32.35	0	18.52	17.26
<i>Cleaning</i>	28.59	0	8.71	7.97
<i>Clothing care</i>	5.80	0	1.62	1.41
<i>Gardening or pet-care</i>	0.90	0	0.81	0.81
<i>Building/repairing</i>	0.59	0	0.38	0.38
<i>Shopping</i>	8.73	0	7.83	7.09
<i>Family and home manag.</i>	0.11	0	0.11	0.11
<i>Other</i>	2.02	0	2.02	1.64

Note: This table shows the average of each measure of parental time investments, along all activities in a weekend day (N=420).

	Total	Quality	Engaged	Positive
Childcare - Support and care				
<i>Putting to bed or waking</i>	23.42	22.83	22.83	17.64
<i>Helping to eat/drink</i>	9.45	8.92	8.92	8.02
<i>Helping to bathe or get dressed</i>	25.66	25.26	25.26	20.07
<i>Other</i>	0.73	0.73	0.73	0.41
Childcare - Reading or writing with child				
<i>Reading with child</i>	11.78	11.71	11.71	11.54
<i>Listening to child reading</i>	0	0	0	0
<i>Teaching how to read or write</i>	1.78	1.78	1.78	1.78
<i>Other</i>	0.45	0.45	0.45	0.45
Childcare - Playing with child				
<i>Playing with child outdoors</i>	4.33	4.33	4.33	4.33
<i>Going to the playground</i>	1.54	1.54	1.54	1.41
<i>Playing with child indoors</i>	22.66	22.59	22.59	21.47
<i>Playing games sitting down</i>	13.83	13.83	13.83	13.83
<i>Playing with dolls</i>	6.73	6.73	6.73	6.73
<i>Playing with model trains, cars</i>	6.42	6.42	6.42	6.42
<i>Playing video games with your child</i>	1.19	1.19	1.19	1.07
<i>Acting out roles or dressing up</i>	3.19	3.19	3.19	3.19
<i>Dancing, laughing, joking with your child</i>	6.52	6.45	6.45	5.79
<i>Playing at creative or building games</i>	12.71	12.71	12.71	12.71
<i>Other</i>	0.92	0.92	0.92	0.92
Childcare - Leisure and cultural activities				
<i>Watching cartoons</i>	6.16	0	6.16	5.57
<i>Watching movies at the cinema</i>	1.23	0	1.23	1.23
<i>Visiting museums</i>	2.71	2.71	2.71	2.42
<i>Watching shows</i>	2.85	2.85	2.85	2.85
<i>Going to the zoo</i>	0	0	0	0
<i>Listening to music or singing</i>	0.66	0.66	0.66	0.66
<i>Watching DVDs, films, tv series</i>	2.95	0	2.95	2.81
<i>Surfing the internet</i>	0	0	0	0
<i>Other</i>	2.04	2.04	2.04	2.04
Childcare - Manual recreational activities				
<i>Colouring and drawing</i>	5.11	5.11	5.11	5.11
<i>Making a collage</i>	0.76	0.76	0.76	0.76
<i>Painting</i>	1.23	1.23	1.23	1.23
<i>Model making</i>	1.73	1.73	1.73	1.45
<i>Other</i>	7.97	7.97	7.97	7.97
Childcare - Outdoor activities and sport				
<i>Walking, strolling or hiking</i>	4.40	4.40	4.40	4.40
<i>Teaching a sport</i>	0.07	0.07	0.07	0.07
<i>Cycling together</i>	1.78	1.78	1.78	1.78
<i>Going to the park</i>	3.04	3.04	3.04	3.04
<i>Other</i>	1.97	1.97	1.97	1.97
Childcare - Indoor activities and sport				
<i>Swimming pool</i>	1.09	1.09	1.09	1.09
<i>Other</i>	0.59	0.59	0.59	0.59
Childcare - Speaking or Listening				
<i>Telling stories or fables</i>	1.45	1.40	1.40	1.40
<i>Speaking face to face</i>	2.07	2.07	2.07	1.95
<i>Speaking via live chat, phone, SMS</i>	0	0	0	0
<i>Giving instructions</i>	0.14	0.09	0.09	0.02
<i>Scolding your child</i>	0.11	0.11	0.11	0
<i>Listening to your child</i>	2.61	2.61	2.61	2.52
<i>Other</i>	0.14	0.14	0.14	0.14
Childcare - Organisation and supervision				
<i>Planning activities</i>	0.11	0	0.11	0.11
<i>Helping to pack</i>	0.11	0	0.09	0.09
<i>Helping to tidy up</i>	0.26	0	0.19	0
<i>Supervising your child</i>	0.16	0	0.16	0.16
<i>Watching your child</i>	0.76	0	0.76	0.76
<i>Waiting for your child</i>	0	0	0	0
<i>Travel due to accompanying your child</i>	1.85	0	1.83	1.31
<i>Other</i>	0.14	0	0.14	0
Childcare - Activities related to school, religious educ., extracurricular				
<i>Helping with homework</i>	1.78	0.16	0.16	0.16
<i>Checking/correcting homework</i>	0.52	0.45	0.45	0.45
<i>Teaching subjects</i>	0.09	0	0	0
<i>Discussion with teachers</i>	0	0	0	0
<i>Other act. related to school</i>	0	0	0	0
<i>Other act. related to relig. educ.</i>	0.04	0	0	0
<i>Other extracurricular act.</i>	1.16	0.90	0.90	0.90
<i>Other activities related to volunteering</i>	0	0	0	0
<i>Other</i>	0.26	0.26	0.26	0.26
Childcare - Medical care				
<i>Disinfecting or applying bandages</i>	0	0	0	0
<i>Accompanying to a medical appointment</i>	0.33	0	0.33	0.11
<i>Talking to child's doctor</i>	0	0	0	0
<i>Other</i>	1.66	0	1.38	0.14

Note: This table shows the average of each measure of parental time investments, along all activities in a weekend day (N=420).

	Total	Quality	Engaged	Positive
Support for others/club/volunteering				
<i>Volunteering</i>	0	0	0	0
<i>Helping adult family members</i>	0.07	0	0	0
<i>Informally helping people</i>	0	0	0	0
<i>Religious activities</i>	2.19	1.45	1.45	1.31
<i>Gatherings and organised meetings</i>	0.21	0	0	0
<i>Other</i>	0.11	0.11	0.11	0.11
Social life and entertainment				
<i>Making or receiving visits from adults</i>	24.47	0	24.47	24.33
<i>Making or receiving visits from children</i>	10.21	0	10.21	10.21
<i>Taking part in children parties</i>	5.33	0	5.33	5.33
<i>Other kinds of parties</i>	2.09	0	2.09	2.09
<i>Going to the restaurant, pub, disco</i>	9.90	0	9.90	9.76
<i>Speaking face to face</i>	2.26	2.19	2.19	2.19
<i>Talking on the phone, chat, SMS</i>	0.95	0	0.78	0.71
<i>Going to the cinema, theatre, concerts</i>	5	0	5	5
<i>Going to sport events</i>	1.54	0	1.54	1.54
<i>Going to the zoo</i>	0	0	0	0
<i>Listening to music or playing an instrument</i>	0.85	0.85	0.85	0.85
<i>Other</i>	12	0	11.54	11.21
Sport and outdoor activities				
<i>Walking or hiking</i>	12.21	11.80	11.80	10.54
<i>Playing ball games</i>	0.33	0.33	0.33	0.33
<i>Cycling</i>	2.26	2.26	2.26	2.26
<i>Swimming</i>	1.64	1.61	1.61	1.57
<i>Fitness, gym</i>	0	0	0	0
<i>Fishing, hunting, fruit picking</i>	0	0	0	0
<i>Other</i>	0.5	0.33	0.33	0.33
Hobbies and pastimes				
<i>Artistic or creative pursuits</i>	5.97	5.04	5.04	5.04
<i>Programming</i>	0	0	0	0
<i>Internet</i>	0.61	0	0	0
<i>Other computer use</i>	0	0	0	0
<i>Videogames</i>	0.78	0	0.15	0.15
<i>Gambling</i>	0	0	0	0
<i>Other</i>	0.41	0	0	0
Communication and mass media				
<i>Reading newspapers and magazines</i>	0.11	0	0	0
<i>Reading books</i>	4.28	3.88	3.88	3.78
<i>Watching television programmes, films, videos</i>	38.71	0	35.40	34.33
<i>Listening to radio and podcast</i>	0.59	0	0.59	0.59
<i>Other</i>	0	0	0	0
Travel				
<i>Travel to/from work</i>	0.26	0	0.26	0.26
<i>Travel to do shopping</i>	6.07	0	5.23	4.47
<i>Travel for childcare</i>	1.5	0	1.5	1.42
<i>Travel for family care</i>	0.78	0	0.66	0.66
<i>Travel for volunteering</i>	0.28	0	0.26	0.26
<i>Travel for socialising</i>	6.26	0	5.07	4.66
<i>Travel for transfer</i>	0.28	0	0.28	0.28
<i>Leisure travel</i>	14.14	0	11.11	8.38
<i>Other</i>	4.40	0	3.5	1.07
Travel				
<i>Relaxing, waiting, doing nothing</i>	2.28	0	1.69	1.64
<i>Don't know or don't remember</i>	0.33	0	0.23	0.23
<i>Other activity not listed</i>	0.5	0	0.42	0.26

Note: This table shows the average of each measure of parental time investments, along all activities in a weekend day (N=420).

Online Appendix G Parenting Stress Index

Within the MinUTo project, we collect the Parenting Stress Index, Parental Stress Index-4 (PSI-4; Short Form Abidin, 2012 and Guarino et al., 2016 for the Italian version). This is a commonly used measure of stress related to the parenting role. We use the general scale providing a measure of “Total Stress”. The following table contains descriptive statistics of this measure on the subsample of parents for which the information on PSI is available.

Table G.1: Descriptive Statistics for PSI Total Stress

Statistic	Value
Observations	446
Mean	78.30
Std. Dev.	17.11
Min	38
Max	145
Missing	57

Online Appendix H Socio-economic drivers of time investments – additional tables

Table H.1: Definition of Socio-economic Variables

Variable Name	Definition
<i>Only Child</i>	Dummy=1 if the child has not brothers and sisters
<i>Father</i>	Dummy=1 if the respondent parent is the father
<i>University</i>	Dummy=1 if the respondent parent achieved at least a university degree
<i>Full-time</i>	Dummy=1 if the respondent parent works full time
<i>Hours Worked</i>	Number of hours worked in a day by respondent parent

Note: Information on *Hours Worked* used here is retrieved from a Socio-economic questionnaire administered together with the time-use survey.

Table H.2: Descriptive Statistics

Variable	Weekday Sample				Weekend Sample			
	Mean	Sd	Min	Max	Mean	Sd	Min	Max
<i>Only Child</i>	0.41	(0.49)	0	1	0.40	(0.49)	0	1
<i>Father</i>	0.14	(0.35)	0	1	0.14	(0.34)	0	1
<i>University</i>	0.71	(0.45)	0	1	0.71	(0.45)	0	1
<i>Full-time</i>	0.65	(0.48)	0	1	0.64	(0.48)	0	1
<i>Hours Worked</i>	6.95	(1.65)	2	12	6.95	(1.70)	0	15

Note: This table shows some summary statistics for key socio-economic and demographic variables separately for the Weekday (N=392) and Weekend (N=420) samples. We have slightly less observations for *Hours worked* in both samples (N=366 and N=390 respectively).

Table H.3: Association between parental characteristics and time investments (Hours worked)

	Weekday (WD)				Weekend (WE)			
	(1) Total	(2) Quality	(3) Engaged	(4) Positive	(5) Total	(6) Quality	(7) Engaged	(8) Positive
Only Child, no siblings	-16.26 (18.11)	-15.27 (11.94)	-15.95 (15.12)	7.23 (15.75)	33.06* (18.94)	28.99* (16.42)	53.78*** (18.55)	66.98*** (21.34)
Father	-56.51** (25.25)	-23.31 (15.46)	-42.15** (21.10)	-38.78* (21.17)	-32.29 (30.67)	22.61 (23.47)	-10.54 (29.76)	-93.07*** (30.70)
University	45.04 (88.01)	42.86 (52.19)	41.26 (73.17)	17.56 (67.50)	-91.53 (72.23)	-100.02 (75.76)	-159.77** (68.39)	-205.28** (80.38)
Hours Worked	-7.51 (10.64)	-3.88 (5.61)	-6.64 (9.26)	-7.94 (8.77)	-13.73** (6.48)	-16.46** (8.09)	-20.42*** (6.42)	-14.18** (6.55)
University $\times$ Hours worked	-12.73 (12.50)	-7.80 (7.33)	-12.77 (10.79)	-8.70 (10.24)	12.63 (9.49)	13.55 (9.98)	21.58** (9.06)	25.93** (11.06)
PSI total stress	-0.16 (0.56)	-0.57* (0.34)	-0.90** (0.45)	-2.05*** (0.43)	0.11 (0.73)	0.71 (0.57)	-0.58 (0.69)	-2.27*** (0.72)
Life Scale	9.69 (7.69)	5.93 (4.44)	13.65** (6.88)	15.19** (6.80)	23.35** (10.01)	13.42* (7.08)	23.29** (9.19)	38.49*** (7.89)
Constant	393.19*** (98.29)	252.73*** (57.43)	364.21*** (79.30)	329.96*** (76.90)	516.30*** (113.46)	288.66*** (94.31)	537.48*** (107.54)	360.62*** (95.62)
M.E. Univ. (Hours w.=2)	19.57 (64.45)	27.26 (38.65)	15.72 (53.11)	0.15 (48.65)	-66.27 (54.70)	-72.91 (56.79)	-116.61** (51.77)	-153.43** (59.73)
M.E. Univ. (Hours w.=3)	6.84 (53.16)	19.47 (32.24)	2.96 (43.63)	-8.55 (39.84)	-53.64 (46.36)	-59.36 (47.61)	-95.02** (46.36)	-127.50** (49.88)
M.E. Univ. (Hours w.=4)	-5.90 (42.55)	11.67 (26.32)	-9.81 (34.91)	-17.26 (31.88)	-41.00 (38.55)	-45.81 (38.83)	-73.44* (38.55)	-101.57** (40.67)
M.E. Univ. (Hours w.=5)	-18.63 (33.28)	3.87 (21.30)	-22.57 (27.69)	-25.96 (25.59)	-28.38 (31.67)	-32.26 (32.62)	-51.86 (31.67)	-75.64** (32.62)
M.E. Univ. (Hours w.=6)	-31.37 (26.78)	-3.92 (17.95)	-35.34 (23.40)	-34.66 (22.44)	-15.75 (26.47)	-18.71 (24.21)	-30.28 (26.47)	-49.71** (24.21)
M.E. Univ. (Hours w.=7)	-44.10* (25.27)	-11.72 (17.27)	-48.10** (23.70)	-43.37* (23.70)	-3.12 (24.03)	-5.16 (20.60)	-8.70 (24.03)	-23.78 (20.60)
M.E. Univ. (Hours w.=8)	-56.84* (29.54)	-19.52 (19.54)	-60.87** (28.42)	-52.07* (28.80)	9.51 (25.19)	8.39 (21.48)	12.89 (25.19)	2.15 (21.48)
M.E. Univ. (Hours w.=9)	-69.57* (37.67)	-27.31 (23.93)	-73.63** (35.88)	-60.77* (36.15)	22.14 (29.52)	21.94 (26.41)	34.47 (29.52)	28.08 (26.41)
M.E. Univ. (Hours w.=10)	-82.30* (47.72)	-35.11 (29.51)	-86.40* (44.71)	-69.48 (44.65)	34.77 (35.90)	35.49 (33.66)	56.05 (35.90)	54.00 (33.66)
Observations	366	366	366	366	390	390	390	390
R-squared	0.07	0.06	0.10	0.13	0.05	0.04	0.08	0.16

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The parameters of each regression are independently estimated using OLS estimator and the software STATA. Marginal effects (M.E.) of university qualification for individuals working different amount of hours are reported at the bottom of the table.

Table H.4: Association between parental characteristics and time investments - Shares

	Weekday (WD) - Shares			Weekend (WE) - Shares		
	Quality	Engaged	Positive	Quality	Engaged	Positive
Only child	-0.00 (2.26)	-0.51 (1.87)	7.51** (3.32)	2.59 (2.22)	4.28*** (1.41)	6.38** (3.10)
Father	5.47 (3.58)	4.02 (2.50)	1.74 (4.85)	6.44* (3.34)	3.27* (1.92)	-10.22** (4.71)
University	4.11 (3.86)	-0.42 (3.12)	-3.66 (5.39)	3.03 (3.82)	-0.46 (2.71)	-1.00 (5.10)
Full-Time	0.12 (4.68)	-2.90 (3.94)	-10.96* (6.21)	0.84 (4.33)	-1.16 (3.17)	-2.59 (5.74)
Full-Time x University	2.00 (5.37)	1.20 (4.42)	2.09 (7.47)	-3.33 (5.14)	0.64 (3.61)	0.31 (6.87)
Constant	54.71*** (3.16)	87.86*** (2.66)	56.68*** (4.09)	54.21*** (3.07)	87.48*** (2.47)	61.54*** (4.04)
M.E. Univ. (Full-Time=1)	6.10* (3.67)	0.78 (3.14)	-1.57 (5.15)	-0.30 (3.44)	0.17 (2.39)	-0.69 (4.57)
M.E. Full-Time (Univ.=1)	2.11 (2.85)	-1.70 (2.29)	-8.87** (4.46)	-2.49 (2.91)	-0.52 (1.85)	-2.28 (3.98)
Observations	388	388	388	409	409	409
R-squared	0.02	0.01	0.03	0.01	0.02	0.03

Note: Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variables: shares (percentages) of Quality, Engaged and Positive time on Total time with child. The parameters of each regression are independently estimated using OLS estimator and the software STATA. Marginal effects (M.E.) of university qualification for individuals working full-time and of working full-time for individuals with a university qualifications are reported at the bottom of the table.

The number of observations is slightly lower than in Table 9 because some respondents report zero time with their child, thus we could not compute their shares (4 for WD and 11 for WE).

Table H.5: Association between parental characteristics and time investments, including PSI.

	Weekday (WD)				Weekend (WE)			
	Total	Quality	Engaged	Positive	Total	Quality	Engaged	Positive
Only child	-18.78 (17.95)	-12.28 (12.13)	-15.44 (15.31)	7.40 (16.03)	23.90 (18.83)	25.68 (16.49)	52.59*** (18.75)	57.36** (22.32)
Father	-67.30*** (25.04)	-26.32 (16.04)	-51.28** (21.50)	-51.83** (21.21)	-31.44 (31.87)	25.22 (24.40)	-10.79 (30.88)	-88.47*** (32.99)
University	-21.39 (34.37)	-10.12 (26.24)	-41.67 (31.08)	-29.51 (30.84)	-65.91** (29.94)	-4.55 (28.89)	-51.15* (30.52)	-30.57 (37.53)
Full-Time	-48.67 (42.46)	-34.20 (29.16)	-65.52 (40.27)	-51.11 (39.89)	-125.97*** (37.50)	-52.97 (33.05)	-108.85*** (38.43)	-87.20** (44.02)
Full-Time x University	-27.14 (47.09)	-3.26 (32.28)	-3.98 (42.91)	-12.73 (42.99)	129.98*** (43.44)	37.81 (38.60)	102.17** (43.92)	62.13 (50.81)
PSI total stress	-0.33 (0.55)	-0.68** (0.32)	-1.11** (0.44)	-2.34*** (0.43)	-0.52 (0.63)	0.15 (0.53)	-1.26** (0.60)	-3.34*** (0.67)
Constant	459.51*** (53.20)	299.48*** (33.42)	476.89*** (43.78)	436.85*** (41.62)	707.73*** (51.12)	336.81*** (42.35)	673.19*** (49.07)	663.53*** (60.50)
M.E. Univ. (Full-Time=1)	-48.53 (32.34)	-13.39 (19.34)	-45.65 (29.74)	-42.24 (29.98)	64.07** (32.25)	33.27 (26.26)	51.03 (32.36)	31.56 (34.19)
M.E. Full-Time (Univ.=1)	-75.81*** (22.85)	-37.47** (15.68)	-69.50*** (18.39)	-63.83*** (20.09)	4.02 (24.59)	-15.16 (21.83)	-6.68 (24.05)	-25.07 (27.35)
Observations	361	361	361	361	382	382	382	382
R-squared	0.08	0.05	0.11	0.13	0.04	0.02	0.05	0.11

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The parameters of each regression are independently estimated using OLS estimator and the software STATA. Marginal effects (M.E.) of university qualification for individuals working full-time and of working full-time for individuals with a university qualifications are reported at the bottom of the table. The number of observations is lower than in Table 9 because it includes only parents for which information on PSI is available.

Table H.6: Association between parental characteristics and Positive Parent Time

	Positive Parent time - WD	Positive Parent time - WE
Only child	7.86 (15.75)	42.46* (23.72)
Father	-51.94** (20.45)	-96.19*** (34.42)
University	-46.16 (32.35)	-37.72 (39.79)
Full-Time	-61.72 (41.18)	-90.41* (48.74)
Full-Time x University	16.97 (43.59)	60.39 (55.08)
PSI total stress	-2.66*** (0.39)	-3.68*** (0.70)
Intercept	445.69*** (40.98)	672.80*** (65.38)
M.E. Univ. (Full-Time=1)	-29.19 (29.31)	22.67 (37.77)
M.E. Full-Time (Univ.=1)	-44.75** (18.54)	-30.03 (27.59)
Observations	361	382
R-squared	0.14	0.11

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The parameters of each regression are independently estimated using OLS estimator and the software **STATA**. Marginal effects (M.E.) of university qualification for individuals working full-time and of working full-time for individuals with a university qualifications are reported at the bottom of the table. The number of observations is lower than in Table 9 because it includes only parents for which information on PSI is available.