

Design and implementation of a time use diary app in the Age 14 Survey of the Millennium Cohort Study

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Outline

- Introduction to the Millennium Cohort Study
- Age 14 Survey time use diary mixed-mode research design
- Time use diary app
- Data quality findings from piloting

Millennium Cohort Study

- Following the lives of approximately 19,000 children born between 2000-2002 in 398 areas of the UK.
- Six waves completed: 9 months, 3, 5, 7, 11 and 14 years.
- Highly multidisciplinary survey, designed to capture the influence of early family context on child development and outcomes throughout childhood, into adolescence and through adulthood
- Linked administrative data: education records, birth registration and hospital of birth records
- Time use diary: new survey element at age 14

Age 14 time use diary: research design

- Two diaries per respondent: one weekday and one weekend day, each covering a 24 hour period
- Pre-coded light diaries: 44 age-specific activity codes, within 12 main categories
- Main activity, location, who with, enjoyment
- Mixed-mode design: time use app & web-administered diary
- Paper diaries offered only to those with no internet access or those refusing to fill in app/web

Time use diary instruments

	Paper	Web	App
Approach	Time-grid	Time-grid	Question-based
Time-unit	10 minute slots	10 minute slots	User-assigned start and end times
Diary dimensions	Overlap	Overlap	Coterminous
Soft and hard checks	No	Yes	Yes
Aide-Memoire	No	Yes	Yes

Paper diary



EARLY MORNING

MORNING



WHAT WERE YOU DOING?		4am	5am	6am	7am	8am	9am	10am	11am	WHAT WERE YOU DOING?			
		10	20	30	40	50	10	20	30	40	50		
Sleep and personal care	Sleeping and resting (including sick in bed) Personal care (including taking a shower/bath, grooming, getting dressed etc.)											Sleeping and resting (including sick in bed) Personal care (including taking a shower/bath, grooming, getting dressed etc.)	Sleep and personal care
School, homework, and education	Homework In class School breaks School clubs Detention											Homework In class School breaks School clubs Detention	School, homework, and education
Paid or unpaid work	Paid work (including paid babysitting and paid work for the family) Unpaid work for family or other non-household members (e.g. help in family business)											Paid work (including paid babysitting and paid work for the family) Unpaid work for family or other non-household members (e.g. help in family business)	Paid or unpaid work
Chores, household, and looking after people or animals	Cooking, cleaning, and shopping for the household Fixing things around the house, fixing bikes, gardening Looking after brothers, sisters, other children in the household Looking after parent or other adult in the household (medical or personal care) Looking after animals											Cooking, cleaning, and shopping for the household Fixing things around the house, fixing bikes, gardening Looking after brothers, sisters, other children in the household Looking after parent or other adult in the household (medical or personal care) Looking after animals	Chores, household, and looking after people or animals
Eating and drinking	Eating or drinking in a restaurant or cafe Eating a meal Eating a snack or having a drink											Eating or drinking in a restaurant or cafe Eating a meal Eating a snack or having a drink	Eating and drinking
Physical exercise and sports	Cycling Individual ball games and training (e.g. tennis, badminton) Jogging, running, walking, hiking Team ball games and training (e.g. football, hockey) Swimming and other water sports Other exercise (e.g. dancing, keeping fit) and other sports (e.g. skateboarding, gymnastics)											Cycling Individual ball games and training (e.g. tennis, badminton) Jogging, running, walking, hiking Team ball games and training (e.g. football, hockey) Swimming and other water sports Other exercise (e.g. dancing, keeping fit) and other sports (e.g. skateboarding, gymnastics)	Physical exercise and sports
Traveling (including walking to school)	Travel by bus, taxi, tube, plane Travel by car, van (including vehicles owned by friends and family) Travel by physically active means (walk, bike etc.)											Travel by bus, taxi, tube, plane Travel by car, van (including vehicles owned by friends and family) Travel by physically active means (walk, bike etc.)	Traveling (including walking to school)
Social time and family time	Attending live sporting events Concerts, theatre, performances, gigs etc. Exhibitions, museums, library, other cultural events Shopping (including window shopping, hanging out at shopping centre) Speaking on the phone (including Skype, video call) Speaking, socialising face-to-face											Attending live sporting events Concerts, theatre, performances, gigs etc. Exhibitions, museums, library, other cultural events Shopping (including window shopping, hanging out at shopping centre) Speaking on the phone (including Skype, video call) Speaking, socialising face-to-face	Social time and family time
Internet, TV, and digital media	Answering emails, instant messaging, texting Browsing and updating social networking sites (e.g. Twitter, Facebook, BBM, Snapchat) General internet browsing, programming (not time on social networking sites) Listening to music, radio, podcast, other audio content Playing electronic games and Apps Watch TV, DVDs, downloaded videos											Answering emails, instant messaging, texting Browsing and updating social networking sites (e.g. Twitter, Facebook, BBM, Snapchat) General internet browsing, programming (not time on social networking sites) Listening to music, radio, podcast, other audio content Playing electronic games and Apps Watch TV, DVDs, downloaded videos	Internet, TV, and digital media
Volunteering and religious activities	Volunteering Religious activities (including going to places of worship, praying etc.)											Volunteering Religious activities (including going to places of worship, praying etc.)	Volunteering and religious activities
Hobbies and other free time activities	Did nothing, just relaxing, bored, waiting Hobbies, arts and crafts, musical activities, writing stories, poetry etc. Reading (not for school)											Did nothing, just relaxing, bored, waiting Hobbies, arts and crafts, musical activities, writing stories, poetry etc. Reading (not for school)	Hobbies and other free time activities
Any other activity	Other activities not listed											Other activities not listed	Any other activity
WHERE WERE YOU?		4am	5am	6am	7am	8am	9am	10am	11am	WHERE WERE YOU?			
		10	20	30	40	50	10	20	30	40	50		
At home Indoors, but not at home Outdoors												At home Indoors, but not at home Outdoors	
WHO WERE YOU WITH?		4am	5am	6am	7am	8am	9am	10am	11am	WHO WERE YOU WITH?			
		10	20	30	40	50	10	20	30	40	50		
Alone Mother Father Friends or other young people (up to 18 years old) Siblings (brother or sister) Other adults												Alone Mother Father Friends or other young people (up to 18 years old) Siblings (brother or sister) Other adults	
HOW MUCH DID YOU LIKE IT?		4am	5am	6am	7am	8am	9am	10am	11am	HOW MUCH DID YOU LIKE IT?			
		10	20	30	40	50	10	20	30	40	50		
1 - Strongly liked 2 - Liked 3 - Neither liked nor disliked 4 - Disliked 5 - Strongly disliked												1 - Strongly liked 2 - Liked 3 - Neither liked nor disliked 4 - Disliked 5 - Strongly disliked	

App diary

08:39

What were you doing at 4:00am?

Please select one option only

Sleep and personal care

School, homework, and education

Paid or unpaid work

Chores, housework, and looking after people or animals

Eating and drinking ✓

☰ < NEXT >

08:39

What were you doing at 4:00am?

Please select one option only

Sleeping and resting (including sick in bed)

Personal care (including taking a shower/bath, grooming, getting dressed etc.)

☰ < NEXT >

08:39

What time did you finish sleeping and resting?

06 58

07 59

08 00

09 01

10 02

☰ < NEXT >

The app

- Bespoke app built by Ipsos MORI using the Ipsos Mobile survey app, in conjunction with Lumi Mobile.
- Worked on iOS and Android operating systems (downloadable for free from the Apple App Store and Google Play Store).
- Required users to enter their unique username to log in.

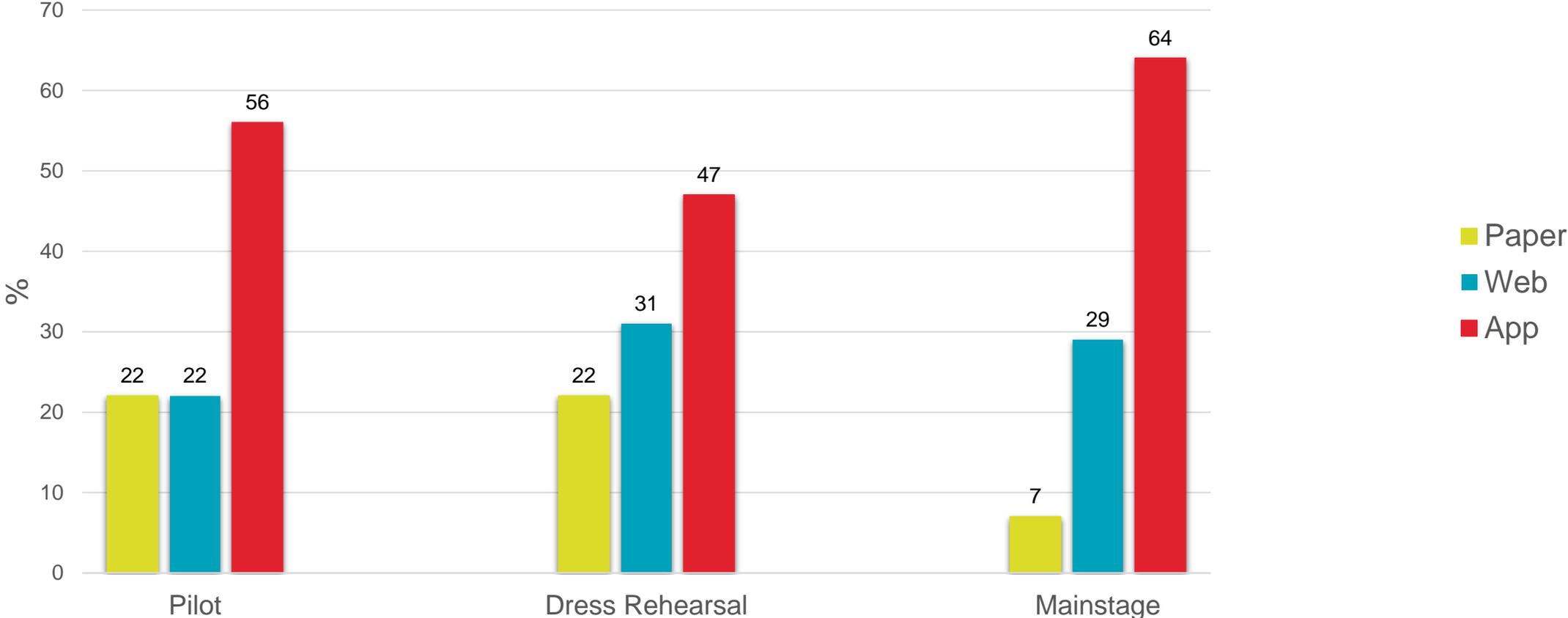
App completion

- Allowed potentially greater flexibility than other modes as respondents could complete the app in real-time if they wanted.
- Respondents were able to complete the diary without an internet connection, but had to be connected to wifi/a data network to send the diary data back.

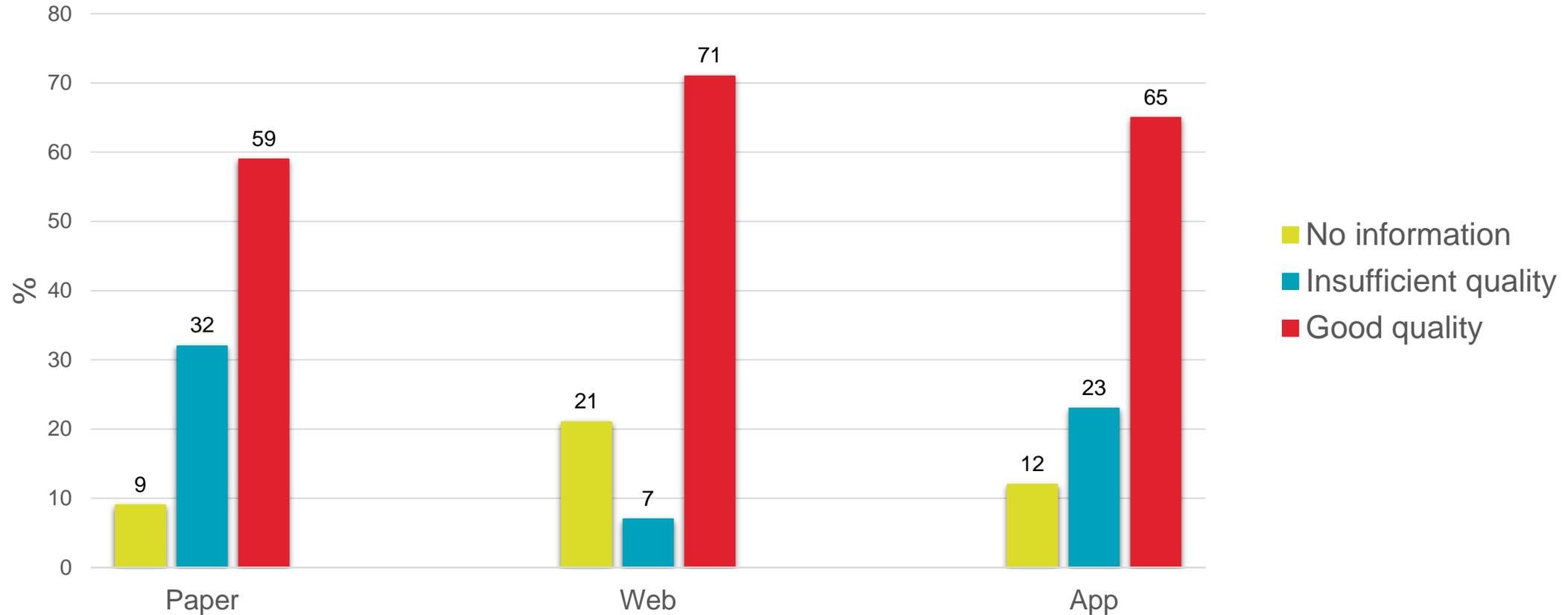
Privacy and data security

- Respondents could log in and out of the diary as they wished (ensuring privacy on shared devices).
- Data sent back to Lumi's encrypted servers.

Instrument take-up across survey stages



Diary quality after full diary processing (pilot and dress rehearsal only)



- Good quality diary threshold: less than 90 minutes missing activity time, 7 episodes, 3 out of 4 main daily activities reported (sleep/rest, personal care, eating/drinking, movement/exercise/travel)
- No information: blank diary returned/submitted

Mean number of activities reported per day

Survey phase	Paper	Web	App	All
Pilot (complete diaries)	30	28	22	26
Pilot (diaries with some time missing)	24	36	24	26
Dress rehearsal (complete diaries)	32	26	21	25
Dress rehearsal (diaries with time missing)	34	No cases	No cases	34

Note: Good quality, complete diaries only

Summary and conclusions

- App was the most popular method of completing the time use diary in both testing phases, as well as the main stage of the Age 14 Survey.
- Rates of good quality diaries and episodes indicators: generally much higher than many teenager and adult time-use surveys across all modes.
- The app does not allow the respondent to visualise context and coterminous dimensions effects, but still yields good quality data.
- Self-selection into mode not yet explored.

For more detail, please see the CLS working paper (2015/5).

Data from the mainstage is due to be deposited at UKDS summer 2017.

Thank you