



Utrecht University

Summer Course Survey Research: Advanced Survey Design

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Ecological momentary Assessment

Text message surveys

Experience sampling

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The core idea

Some things are temporal

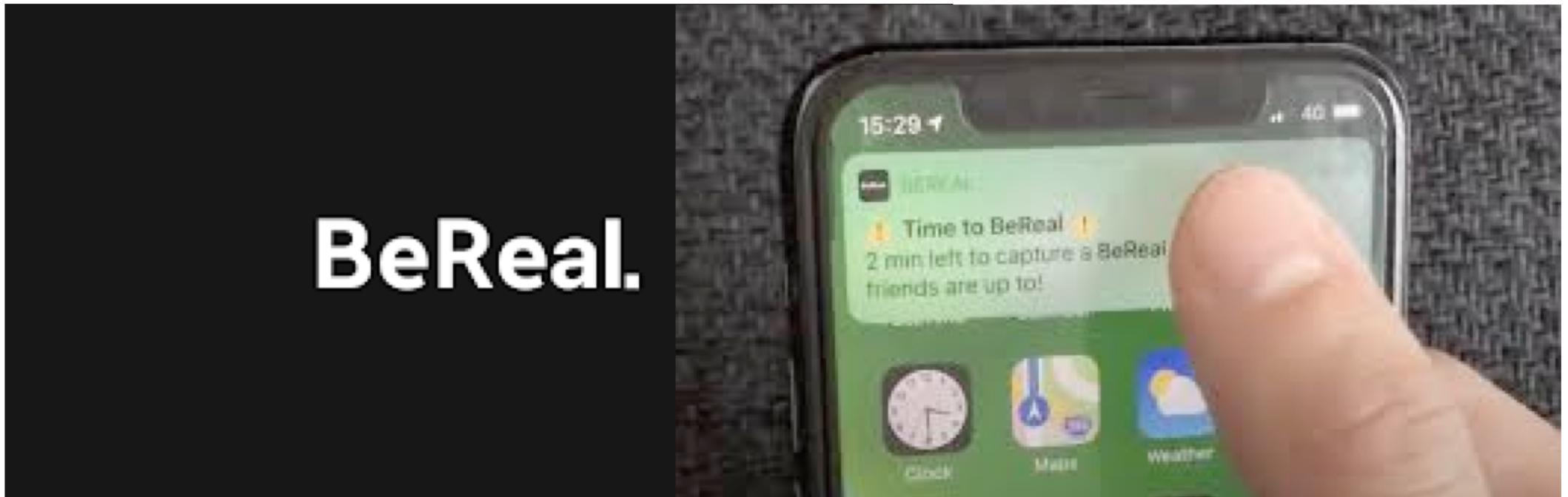
- Feelings, time use, behaviors

Hard to measure

- Surveys use retrospective questions, or ask respondents to “average”

Solution: Ask respondents ‘in the moment’

ESM using cameras



Taken from Kelly et al (2015)

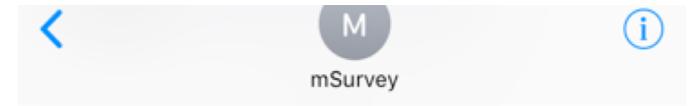
Kelly, P., Thomas, E., Doherty, A., Harms, T., Burke, Ó., Gershuny, J., & Foster, C. (2015). Developing a method to test the validity of 24 hour time use diaries using wearable cameras: a feasibility pilot. *PLoS One*, 10(12), e0142198.

The basics of ESM

- Questions at random moments of the day
 - Can sample across the day (everyone at different moment)
 - Respondents get X minutes to reply (10/30)
 - Sophisticated
- Using an app (see next days)
 - Advantage that you can sample when phone is active
 - Get sensor-measurements as well
 - Lots of platforms (appyPie, ...)
- Using text messages (sms)
 - Low-tech, easy but simple
 - Telegram an option, but whatsapp not feasible

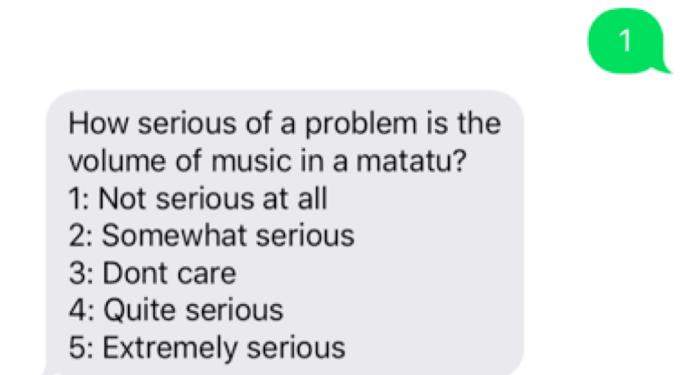
Text message surveys

- 1 question per message
- Not limited to ESM focus on feelings/etc.
- Answers often limited to 140 characters
- Multiple questions in sequence possible
- Can be automated
- Very popular in emerging countries



Today 12:52

How serious of a problem is the volume of music in a matatu?
1: Not serious at all
2: Somewhat serious
3: Dont care
4: Quite serious
5: Extremely serious



Do you agree/disagree: Matatu drivers are competently trained to drive safely?



Other uses of text message surveys

- As a pre-notification
 - Often in medical studies
 - Increases response rate with a few %-points (e.g. Sallis et al 2019)
- As an invitation/recruitment method
 - As a push-to-web method
 - In Australia some limited success (Kocar, 2022)
 - In panels quite successful in combination with e-mail (Toepoel & Lugtig, 2020)
 - Random Digit Dialing?
- As a reminder
 - Understudied, but some successes so far (kannisto et al, 2014)

Apps and why EMA is so promising

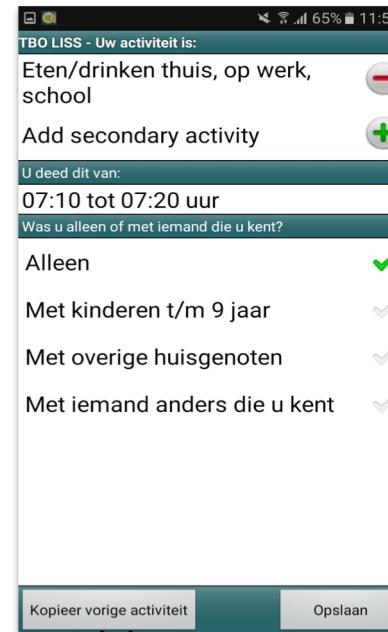
- Diary studies
 - e.g., time use, expenditure, food consumption via app or web browser



Daily overview

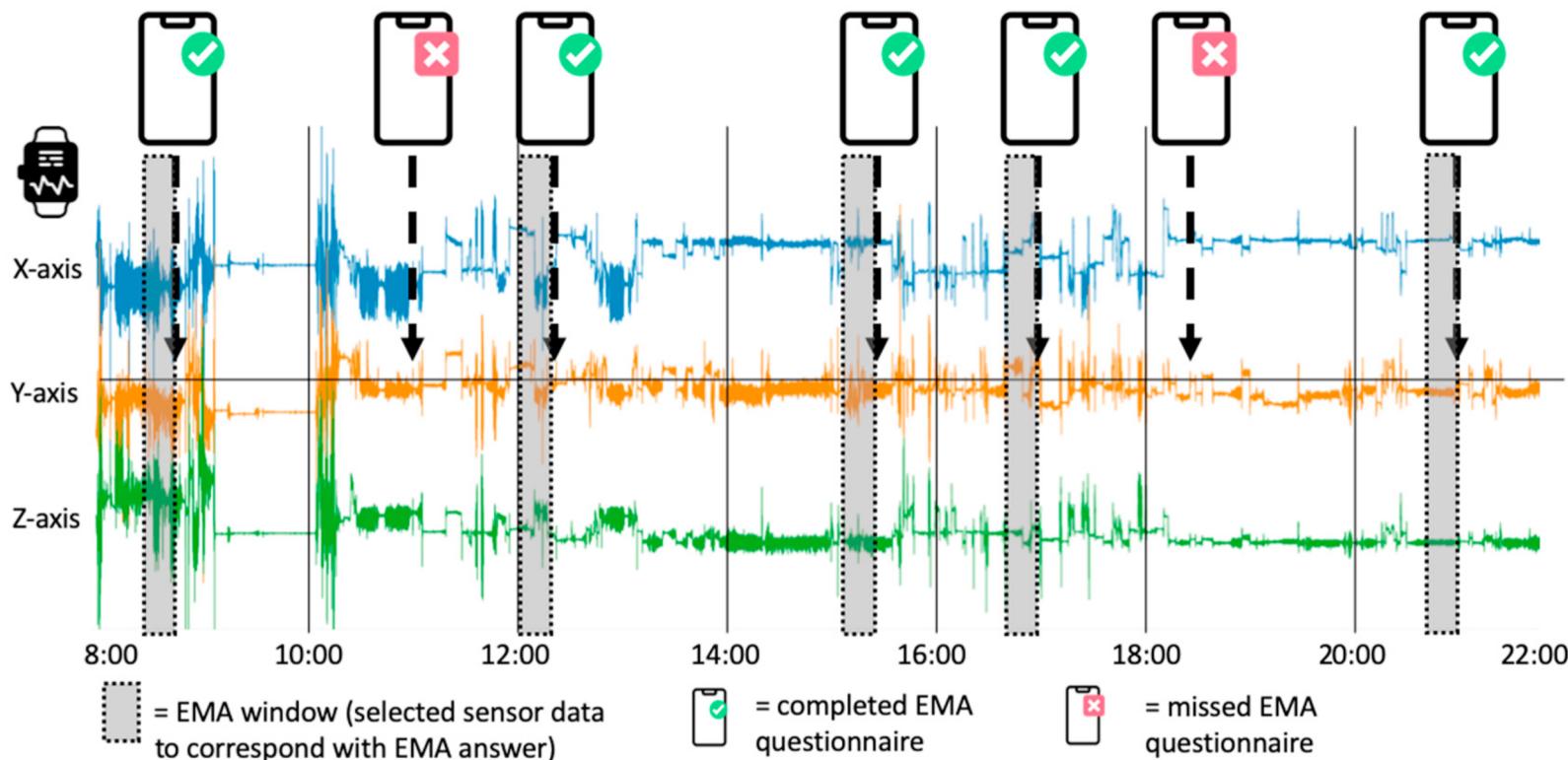


Adding activities



Adding activity information

why EMA is so promising



Habets et al, 2021)

Self-reports on smartphones

- Diary studies (e.g., time use, food consumption) via app or web browser
- Ecological Momentary Assessment (EMA)/Experience Sampling Method (ESM) via app
 - Collecting data several times a day on several days per week allows tracking of change within individuals in much detail
 - Immediate reporting increases ecological validity
 - Participants “pinged” to report about current circumstances
 - Objective situation: e.g., “What are you doing?”
 - Subjective state: e.g., “How anxious are you right now?”
 - Time-based vs. geolocation-based vs. event-based

Example time-based EMA: How does physical activity affect happiness? (Lathia et al. 2017)

- *Mood-Tracking Application* on smartphones of 12,000 volunteer Android users for up to 17 months
- EMA questions: affect two or more times during the day
- Physical activity for immediately preceding fifteen minute period measured both by self-report (EMA) and passively by accelerometer

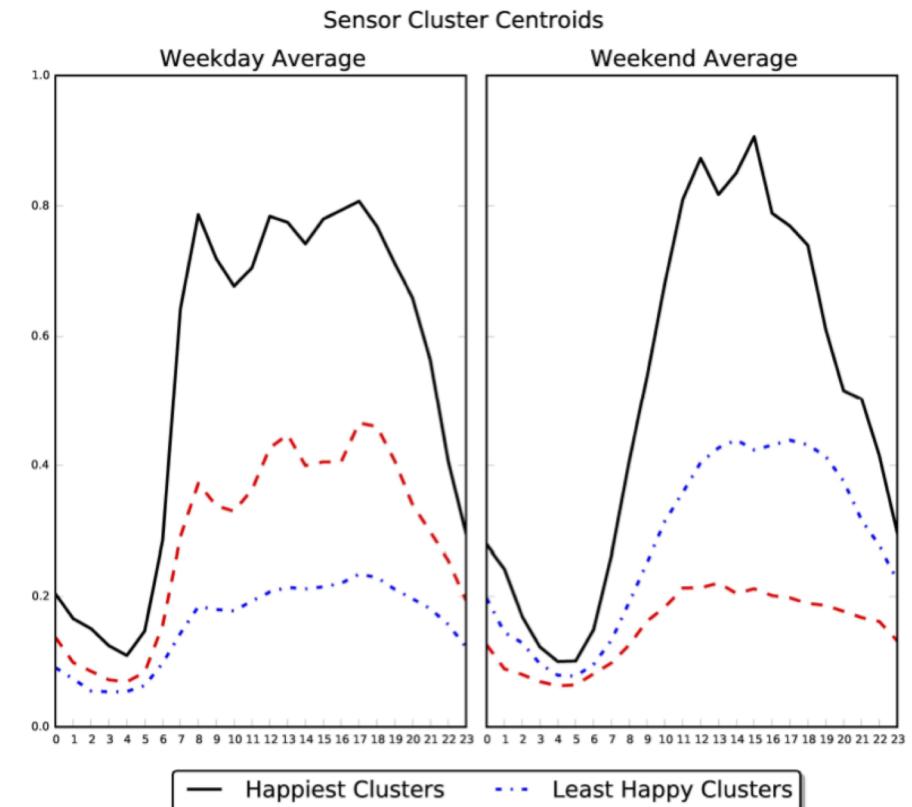
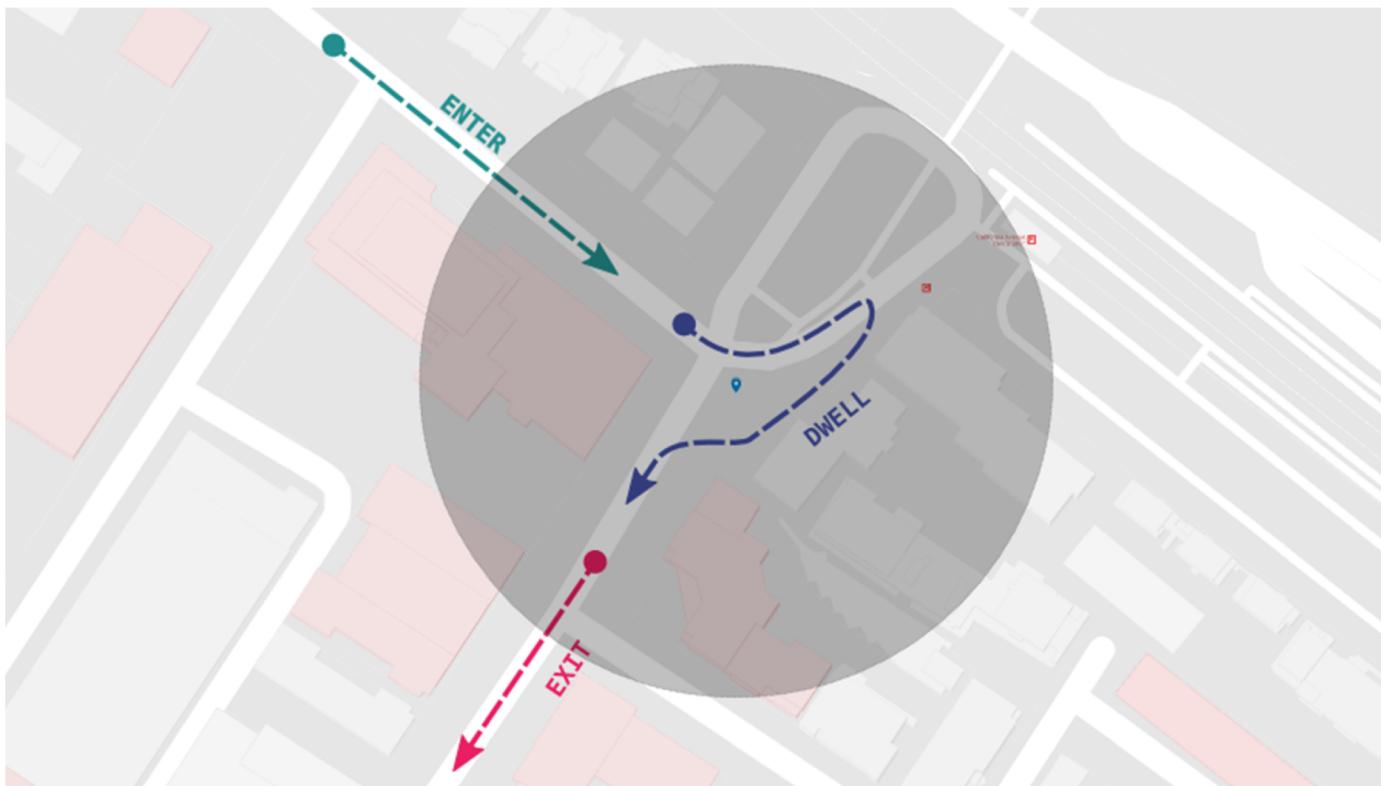


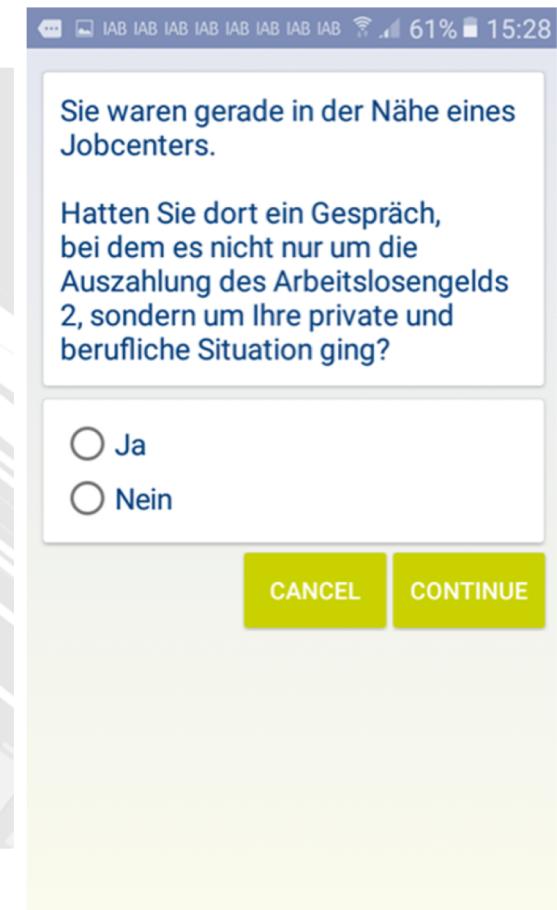
Fig 3. Centroids for the clusters generated from (left) weekday and (right) weekend activity profiles.

doi:10.1371/journal.pone.0160589.g003

Example geolocation-based EMA (“Geofencing”): Visits to job centers (Haas et al. 2020)



Source: <https://developers.google.com/location-context/geofencing/>



EMA in context of longitudinal study

- Measurement burst designs (Nesselroade, 1991!)

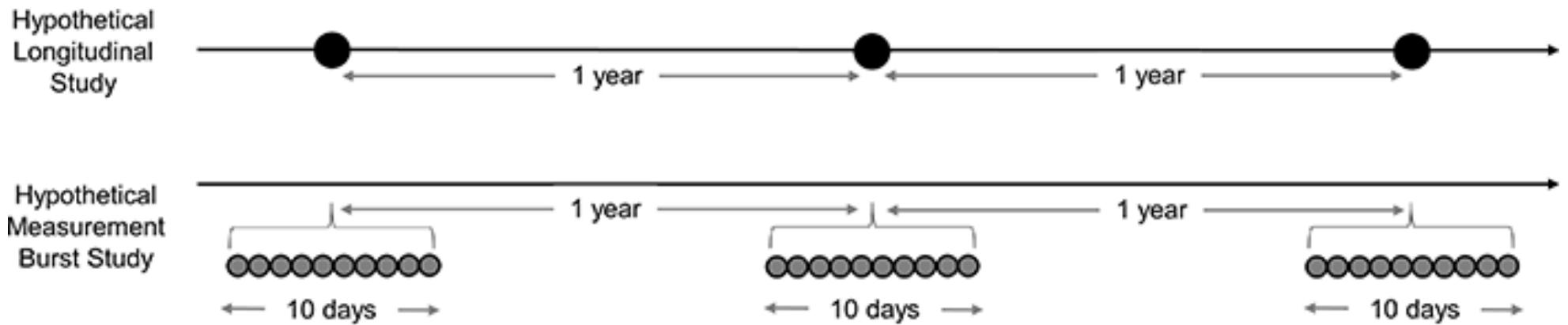


Figure taken from Cho, G., Pasquini, G., & Scott, S. B. (2019). Measurement Burst Designs in Lifespan Developmental Research. In *Oxford Research Encyclopedia of Psychology*.

Towards a new type of panel?

- Continuous measurements, respondent input
- Event-driven intensive measurements
 - Life events: Please tell us when you?
 - become pregnant, Move house, Start a new job
 - News events:
 - Snap polls (but then really snap!)
- Geo-fencing as screening
 - Everyone who visited a particular location
- ESM/EMA: link short-change to long-term change

Issues/concerns

- EMA models (time series) often require 50+ measurements
- Independence of measurements
 - Indications respondents remember earlier answers
- How often to ask?
- How long observation period?
- **Selective nonresponse**

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