The Use of Mobile Devices to Track Family Interactions

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Key Findings

- Using mobile devices is an effective way to conduct daily diary studies, including studies involving multiple-respondent household.
- The use of mobile devices allowed us to:
  - Simultaneously collect data across family members
  - Garner a high response
  - Have a quick turnaround in data analysis
- Smartphones do not replace staff time
- Smartphone technology evolution makes many of the challenges we faced obsolete, though new ones emerge.
Supporting Healthy Marriage (SHM) Evaluation

- Funded by the Administration for Children and Families in the Department of Health and Human Services.
- Conducted by MDRC with support by Abt SRBI and Abt Associates.
- First large-scale, multi-site test of marriage education programs for low-income married couples.
- Overall study sample included 12,190 individuals (6,095 couples) that were married or living in marriage-like situations.
- Participants randomly assigned to a treatment group received marriage education services over the course of 12 months.
- The **SHM Daily Diary Study** was the final component of the 6 data collection activities associated with the Supporting Healthy Marriage Evaluation.
Daily Diary Study

- Funded by the W.T. Grant Foundation
  - PI’s: JoAnn Hsueh, MDRC; Mark Cummings, University of Notre Dame; Tina Merrilees, SUNY-Geneseo

- Questions measured the frequency and type of communications with family members each day for 15 days

- 100 SHM families; 300 individual respondents:
  - Each family consisted of 2 parents and an adolescent (11 - 16 years old)
  - 4,148 completed diary entries

- $50 split incentive paid to each respondent
  - Incentive contingent on any submission, did not force respondents to answer all days.
  - Design changed from $10/$10/$30 to $10/$40.
  - Final incentive contingent on returning equipment.
Design Considerations

- Much research has been done on the use of daily diary studies but little if any that focused on a) concurrent diary use within a family; b) daily diary studies on mobile devices.

- Research team took several factors into consideration:
  - Mode
  - Survey Design
  - Technology
  - Training
Mode Considerations

- Considered several modes including:
  - Interactive Voice Response (IVR)
  - Computer Assisted Telephone Interviewing (CATI)
  - Paper diary
  - Web (non-mobile)
  - Mobile devices
  - Combination of the above
Selected Mode: Mobile Devices

- More convenient for respondent
- More consistent (reminder alarms to encourage reporting at comparable times each day)
- Real-time data monitoring
- Respondent privacy
Survey Considerations

- **Survey content considerations:**
  - Capture information about daily interactions between parents and youth.
  - Specific focus on incidence and handling of disagreements between parent and child or between spouses.
  - Comparability to other studies of similar populations.

- **Survey design considerations:**
  - Questionnaire length (no longer than 5 – 10 minutes/day) to discourage respondent fatigue
  - Compatible with smartphone
    - Easy to read on screen (short questions, simple responses)
    - One question per screen
    - Easy to navigate with stylus
    - Easy to navigate (ability to skip questions)
<table>
<thead>
<tr>
<th>Concern</th>
<th>Strategy</th>
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<tbody>
<tr>
<td>Multiple respondents in HH; sensitive questions causing disagreements between family members</td>
<td>All 3 family members had to consent prior to enrollment; comprehensive training with all family members simultaneously</td>
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<td>Data security/privacy</td>
<td>- Unique confidential login</td>
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<td>- Participation would increase incidence of disagreements or escalate the severity</td>
<td>- Question text displayed for 30 seconds before timing out</td>
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<tr>
<td>- Response persuasion/omission</td>
<td>- 1 question displayed at a time</td>
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<td>Inability to actively monitor and provide assistance</td>
<td>- Could not pull up responses</td>
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<td>Coercion to participate for $$</td>
<td>Included study number and email address; list of resources</td>
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<td>Money orders as incentives (rather than checks)</td>
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Mobile Device Requirements (2009-2010)

- Fairly easy to use; most people did not have smartphones A.K.A. PDA’s
- Not desirable enough to be stolen/not returned
- Long battery life
- Able to connect to network; able to retain information when not connected to network
- Simple design; easy to train/use
- Easy to customize software
- Could be “locked” to avoid additional charges
- Programmable alarms to remind respondents to complete diary
- Questionnaire compatibility/usability
Hardware/Software Decisions Made Prior to Smartphone Ubiquity

Smartphone use

Source: Pew Research Center Internet Provider Survey
*Source: Pyramid Research Handset Forecast; 2008 to 2010
Daily Diary Study Schedule

- Study design preparations began in 2009
- Data collection ran from October 2010 through February 2013
  - Pilot 1: 5 families; October 2010 – December 2010 (21 day reporting period)
  - Pilot 2: 15 families May 2011 - September 2011 (15 day reporting period)
  - Main Study: 80 families January 2012 – February 2013 (15 day reporting period)
Study Device Specifications

- Rented (then purchased) approximately 54 Palm Treo 755p to conduct study
- Diary programmed by Techneos on Entryware platform; Abt SRBI tested and managed device
- Devices were PIN protected to prevent data usage charges by respondents
  - No other program/app could be accessed
- Diary programmed with a reporting period of 12:01am – 12 midnight
- Alarms programmed to chime at 6:00pm; then every 30 minutes until 8:00 pm or diary completion
Daily Diary Study Data Collection Overview

1. Family eligible
2. Advance letter sent
3. Recruiting call/consent process/schedule training
4. Ship materials
5. Train family/data collection begins (15 days)
6. Check-in calls
7. Data collection ends/devices returned
Data Collection Schedule

Time between advance mail and diary start (n=80)
- Mean 75.7 days
- Min 12 days
- Max 328 days

Completing diary to returning devices (n=75)*
- Mean 11.8 days
- Min 3 days
- Max 68 days

Total study duration (n=75)*
- Mean 100.2 days
- Min 30 days
- Max 370 days

*5 families have yet to return devices
Diary Completion Rate By Family Member (Main Study Only)

- Father: 90%
- Mother: 90%
- Child: 91%
Diary Response Length By Study Day (Main Study Only)

Mean Reporting Time (minutes)

Study Day Number

Father
Mother
Child
Daily reporting periods ran from 12:01 am – 12:00 midnight
Smartphones Do Not Replace Staff Time

- Smartphone technology reduced respondent burden
- However, staffing requirements were extensive in order to implement the study efficiently:
  - Staff conducted extensive training on the instrument and technology
  - Recruitment took a long time as staff had to recruit and gain informed consent each participant individually
  - Staff had to monitor data entry on a daily basis to ensure entries were made; make reminder calls if they weren’t and troubleshoot as needed
  - Preparing packages to send out prior to training and processing
Many Challenges Faced Are Now Obsolete

- Lost devices/stylii/chargers
- Existing interface could not accept Spanish characters/translation
- Programming glitch caused by Leap Year – 7 families lost access to diary; 4 had to be sent new phones
- Batteries didn’t hold charge
- Limit on number of respondents that could participate simultaneously
- Lag in return of devices impacted the ability to recruit new families at a faster pace
- Additional time to clean/repair/reprogram phones before next round
- Odd ways of damaging devices
- Less training if using respondent owned devices
Certain Problems May Still Exist

- Odd ways of damaging devices (?)
- Programming changes may lead to longer downtime than if using CATI/IVR/Web
- Limitations on questionnaire design/appearance
- Scheduling 2 parents and an adolescent for a 1 – 2 hour concurrent training AND a simultaneous 15 day data collection period
And Newer Problems Emerge

- **Mobile web or app?**
  - Apps must be programmed to work with all varieties of smartphones
  - People may not want to download app or access web survey from private phone (data charges), but may not want to carry second device
  - Pew Research Center, April, 2015, “App vs. Web for Surveys of Smartphone Users”

- **Less control over the devices**
  - Users can turn off alarms, etc

- **Data collection among non-smartphone users?**
SHM Daily Diary Study
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Supporting Healthy Marriage Evaluation
http://www.mdrc.org/project/supporting-healthy-marriage#overview