Smartphones, Psychiatry, & Big Data

@neal_lathia, @ConorFarrington
University of Cambridge
71% 195 87%

TECHNOLOGICAL  CULTURAL  HEALTH
DIARY METHODS: Capturing Life as it is Lived

Niall Bolger, Angelina Davis, and Eshkol Rafaeli
Psychology Department, New York University, New York, New York 10003;
e-mail: niall.bolger@nyu.edu, aed232@nyu.edu, erm5@nyu.edu

Key Words experience sampling method, longitudinal designs, electronic data collection, self-report measures, multilevel models

Abstract In diary studies, people provide frequent reports on the events and experiences of their daily lives. These reports capture the particulars of experience in a way that is not possible using traditional designs. We review the types of research questions that diary methods are best equipped to answer, the main designs that can be used, current technology for obtaining diary reports, and appropriate data analysis strategies. Main research developments include the use of electronic forms of data and
Accelerometer
GPS / Wi-Fi
Gyroscope
Bluetooth
Microphone
Humidity
Temperature
Phone / Text Logs
Device Logs
Social Media APIs
App Usage
Accelerometer | Physical Activity
GPS / Wi-Fi | Mobility
Gyroscope | Orientation
Bluetooth | Co-Location
Microphone | Ambient Audio
Humidity | Environment
Temperature | Environment
Phone / Text Logs | Socialising
Device Logs | Network
Social Media APIs | Socialising
App Usage | Information Needs
Case 1: Subjective Wellbeing & Behaviour

Conscientiousness
You scored on the lower end of the average range for conscientiousness (lower than 50% of all people). Conscientious people tend to be efficient, organized and thorough, and tend not to be careless, lazy or impulsive.

Emotional Stability
You scored quite high on emotional stability (higher than 75% of all people). Emotionally stable people tend to be contented and self-confident, and tend not to be tense, irritable, shy or moody.

Extraversion
You scored on the upper end of the average range for extraversion (higher than 50% of all people).
Case 2: Smoking Cessation

Naughton et al. (in prep). *The feasibility of a context aware smoking cessation app (Q Sense): A mixed methods study*. 2015.
Hello, Neal.

PREPARE & LEARN

20 days, 23:58:44 left.

My Profile  I'm Smoking

Ok, Neal! The first stage is "Prepare & Learn."

2/4: Cravings and Urges.

How strong was the urge to smoke just before you lit up?

Very Strong

Slight

Extremely Strong

Submit

My Emotions

View Time Of Day
Location
SMS Patterns
Accelerometer
Phone Screen
Microphone
Call Patterns
Personality
Sociability
Connectedness

Survey Stats

Emotion Sense

Time Of Day

Data:  Last 30 days.

Colours

Stress
Alert
Excitement

Negative

Positive

Depression
Sleepy
Relaxation
PREPARE & LEARN

5 days, 7:24:23 left.

Stress Levels

Your ratings for how stressed you felt just before smoking.

Based on your reports, stress seems to be part of why you smoke.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>6.67%</td>
</tr>
<tr>
<td>Slightly</td>
<td>26.67%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>60%</td>
</tr>
<tr>
<td>Very</td>
<td>6.67%</td>
</tr>
<tr>
<td>Extremely</td>
<td>0%</td>
</tr>
</tbody>
</table>

You have 19 reports in this area.
Stress Levels

Your ratings for how stressed you felt just before smoking.
Based on your reports, stress seems to be part of why you smoke.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>6.67%</td>
</tr>
<tr>
<td>Slightly</td>
<td>26.67%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>60%</td>
</tr>
<tr>
<td>Very</td>
<td>6.67%</td>
</tr>
<tr>
<td>Extremely</td>
<td>0%</td>
</tr>
</tbody>
</table>

Stress, Depression, Urges, Situation, Social (Other Smokers).

MAKE LIFE EASIER
Quit tip - when you start your quit attempt make life easier by replacing your smoking routines e.g. try chewing gum or mints instead of smoking when socialising.

18 Dec 2014 16:30:28
Discussion
SCHIZOPHRENIA
ANXIETY
MOOD ADJUSTMENT
ANTI-SOCIAL PERSONALITY
ON/OFFLINE MOOD EXPRESSION

Easy M
EXPERIENCE SAMPLING TOOL

Participate in smartphone-based research projects: answer questions at different times of the day, and volunteer sensor data from your smartphone.
Individuals (across cultures) use technologies differently. Individuals (within cultures) have varying access to technology.

How can the technology be designed to consider these differences?
Individuals (across cultures) have varying attitudes to mental health. Individuals (within cultures) may need different kinds of care.

Will a smartphone support tool empower, or alienate?
New interventions could save time and money. New data changes how healthcare can manage and provide care.

Will this data empower or burden health services?
Smartphones, Psychiatry, & Big Data

@neal_lathia, @ConorFarrington
University of Cambridge

Supported by: