Web (Survey) Engagement

Mick P. Couper
(Survey Research Center, University of Michigan)

Session Objectives

- Identify key issues regarding Web survey engagement
- Review research evidence (and gaps) from online surveys and health interventions related to engagement
- Discuss the measurement of engagement in online studies
- Offer guidance on maximizing engagement in Web studies
What is Engagement?

- Program engagement and survey engagement are closely related
- In online studies, both types of engagement are measurable
- Program engagement: for an online intervention to be effective, participants must be exposed to or engaged with the content
- Many different indicators of engagement
  - Number of page visits, time on page, subjective reactions, etc.
  - See Danaher et al. (2006), Glasgow et al. (2007), Strecher et al. (2008)

Key Elements of Survey Engagement

- Recruitment and enrollment
  - Getting to the site, completing baseline survey and enrolling in the study
  - Minimize unit nonresponse
- Retention
  - Completing all aspects of the intervention, including follow-up surveys
  - Minimize drop-out or attrition
- Completeness
  - Answering all relevant questions as completely and accurately as possible
  - Minimize missing data and measurement error
Recruitment Mode

- Even though the survey(s) and intervention are online, there are many ways to recruit subjects for online studies.

- Broadcast versus targeted recruitment
  - Choice leads to different designs
  - Targeted recruitment superior from an inferential perspective (see Couper, 2007)

- Options for targeted recruitment include:
  - In-person or face-to-face
  - Telephone
  - Mail
  - E-mail

Interviewer-Administered Recruitment Methods

- Conducted by telephone or in person (face-to-face)

- Need trained interviewer or staff person to administer recruitment protocols

- Advantages: good for persuading, motivating, explaining, etc.

- Disadvantages: expensive and time-consuming

- In-person better than phone for legitimacy, delivery of incentive, written consent, provision of URL, login and password, etc.
Self-Administered Recruitment Methods

- Mail and e-mail invitations
- E-mail
  - Cheaper than mail
  - Good for delivery of URL, password, etc.
  - Not optimal for access, legitimacy, delivery of incentives, etc.
  - E-mail addresses suffer from greater “churn” than mail addresses, less likely to be on sampling “frame”
- If have mail and e-mail addresses:
  - Consider combination: letter followed by e-mail
- If don’t have e-mail, ensure than URL, login and password are short and easy to enter
- In either case, use telephone to supplement recruitment activities

Summary on Recruitment Methods

- Choice of mode is often dictated by information available on the potential participants
- Use the most appropriate method, given the information and resources available, and the goals of the study
- All methods have advantages and drawbacks
- At baseline, gather information on alternative contact modes to maximize flexibility of follow-up
Invitations

- Individual (targeted) invitations are more effective than broadcast, open invitations
- Information on sampling frame can permit targeting
  - Pre-screen on key characteristics
  - Personalize invitations (Dear [Name] > Dear [Member]) > no salutation
- Better if invitation comes from a known entity
  - Person or organization with which they are familiar
  - More likely to open and read letter or e-mail
  - E-mail less likely to go to spam

Example: Invitations

- Glasgow et al. (2007)
- Test of tailored online behavioral weight loss program in 3 HMOs
- Two recruitment methods:
  - Personal letters of invitation sent to selected members of HMOs, based on information in database
  - General announcements in member newsletters
E-Mail Invitations

- Little research on optimal design of e-mail invitations
- No evidence of effect of subject matter line on response
  - Several studies with null findings
- Status of sender affects response
  - Higher status sender increases response
  - Known entity increases response
- Personalized salutation increases response
  - Evidence from several university-based studies

Invitation Example: Percent Enrollment by Recruitment Method

Source: Glasgow et al. (2007)
Example: Length of Invitation and URL Placement

- Kaplowitz et al. (2008)
- Survey of MSU faculty, staff and students
- Several embedded experiments
- Length of invitation and URL placement have independent effects; we examine the main effects separately
- Conventional wisdom:
  - Length: shorter is better
  - URL: near the top (above the fold) is better

Example Invitations

Figure 1: Short text invite with 10 minute effort, top URL, and VP subject line design

Figure 2: Long text invite with < 30 minute effort, bottom URL, and environmental subject design
Response Rates by Length of Invitation

All differences statistically significant, p<.05

Source: Kaplowitz et al. (2008)

Response Rates by URL Placement

* Difference statistically significant, p<.05

Source: Kaplowitz et al. (2008)
Content of E-Mail Invitations

- Be clear how you got their name/e-mail
- Be clear about what you’re asking them to do
- Avoid graphics in e-mail
  - Many people have this turned off
  - Requires extra downloads for those with slow connections
- Provide full URL in message
  - Don’t hide URL behind pseudo link
  - Use explicit login/password, but make it easy to type
  - Use easy to type and remember URL

Incentives

- Evidence from the survey literature
  - Prepaid (unconditional) incentives are more effective than promised (conditional) ones
  - Cash is better than alternatives (lottery, gift certificate, PayPal, etc.)
  - More money is better than less
- Some evidence that this also applies to online interventions
- Delivery of incentives online presents challenges
  - Combination of mail and Internet seems best
Incentives: Example

- Alexander et al. (2008)
- Recruitment for MENU: Making Effective Nutritional Choices for Cancer Prevention
  - Interactive Website to promote greater intake of fruit and vegetables
- As part of the pretest in one HMO, we embedded an incentive experiment
- Recruitment by letter, which included and/or explained incentives
- 4 enrollment incentives crossed with same 4 incentives for retention at 3 months (16 initial arms):
  - $0, $5 cash, $10 promised, $20 promised
- In 2nd wave, dropped the $5 and $20 arms, and added $1 and $2 cash arms

MENU Incentive Results: Wave 1

- Best enrollment rate:
  - 11% for $5 prepaid + $20 promised
  - But also relative expensive ($55 per enrollee)
- Cheapest enrollment:
  - $32 for $0 prepaid + $5 prepaid
  - $32 for $10 promised + $20 promised
- The $5 prepaid incentive outperformed the other conditions for initial enrollment
- Could we get the same effect for less than $5 up front?
### MENU Incentive Study: Analysis for Enrollment

<table>
<thead>
<tr>
<th>Enrollment Incentive</th>
<th>OR*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>$1 prepaid</td>
<td>1.6</td>
<td>1.2-2.1</td>
</tr>
<tr>
<td>$2 prepaid</td>
<td>3.5</td>
<td>2.5-5.0</td>
</tr>
<tr>
<td>$5 prepaid</td>
<td>3.0</td>
<td>2.0-4.6</td>
</tr>
<tr>
<td>$10 promised</td>
<td>1.3</td>
<td>0.9-1.7</td>
</tr>
<tr>
<td>$20 promised</td>
<td>1.3</td>
<td>0.7-2.2</td>
</tr>
</tbody>
</table>

* Adjusted for age, sex, race and follow-up incentive

Source: Alexander et al. (2008)

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### Incentive Study: Analysis for Enrollment

<table>
<thead>
<tr>
<th>Follow up Incentive</th>
<th>OR*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>$5 prepaid</td>
<td>1.1</td>
<td>0.8-1.5</td>
</tr>
<tr>
<td>$10 promised</td>
<td>1.3</td>
<td>0.9-1.8</td>
</tr>
<tr>
<td>$20 promised</td>
<td>1.9</td>
<td>1.4-2.5</td>
</tr>
</tbody>
</table>

* Adjusted for age, sex, race and enrollment incentive

Source: Alexander et al. (2008)
Key Results

- Novelty made a difference (the $2 bill did better than a $1 bill)
- Cash in the letter is better than nothing and better than promised cash
- $2 worked as well as $5 for recruitment (significant savings)
- The more money promised at 3 months the better
- The $2 prepaid and $20 promised was used for the main study

Lessons Learned

- Survey findings on incentives do appear to translate to the RCT recruitment setting
  - Prepaid incentives are more effective than promised incentives
- Expected recruitment/response rates make a difference to costs
  - No surprise that most online panels use lotteries and other promised incentives
  - But the cost disadvantage of prepaid incentives is not that large, even with very low recruitment rates
Retention or Attrition

- Differential attrition poses potential threats to the inferential value of the study
- Minimize attrition through judicious use of incentives, reduced burden, mode switches, etc.
- Measure effect of attrition using baseline measures, paradata and special follow-up studies
- Separate drop-out from the intervention from failure to complete follow-up surveys

Retention

- E-mail reminders are cheap and easy to automate
- E-mail churn makes follow-up less effective over time
- However, repeated e-mail messages have diminishing returns and likely annoy participants
- Consider using mail or telephone in addition to e-mail
Follow-up: Example

- Couper et al. (2007)
- 4,000+ HMO members recruited to participate in a RCT of a Web-based weight management program
- Three Web-based follow-up surveys at 3 months, 6 months and 12 months after baseline

Participation in the Weight Management Study

Source: Rothert et al. (2006)
Design of the Follow-up Study

- Embedded mode experiment
  - 300 assigned to follow-up by telephone
  - 400 assigned to follow-up by mail
- Telephone survey
  - No advance letter, no incentive
- Mail survey
  - Single mailing
  - Questionnaires sent from University of Michigan with HMO return address
  - Cover letter signed by HMO regional directors
  - Incentive ($5 bill) enclosed

Response Rates

<table>
<thead>
<tr>
<th></th>
<th>Phone</th>
<th>Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>60</td>
<td>52</td>
</tr>
<tr>
<td>Control</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>

59.3% vs. 55.8%

Difference between treatment and control not significant in either mode, p > .10

Source: Couper et al. (2007)
Cost Comparisons: Estimated Direct Costs of Data Collection

Source: Couper et al. (2007)

Lessons Learned

- Switching to another mode (e.g., from Web to mail) can bring in a substantial proportion of those lost to follow-up
  - Almost half (49.5%) of those who completed the follow-up survey did not recall receiving the e-mail invitation to the 12-month follow-up survey
- Mail is cheaper than telephone, but equally effective in terms of response rate, and closer to the original measurement (i.e., less subject to social desirability and order effects)
- Follow-up increases the number of cases for analysis and reduces the risk of attrition bias
Paradata

- What are paradata?
  - Data about the process
  - Also called user metrics or Web analytics
  - Byproduct of the process of online data collection

- How can paradata be used to measure engagement?
  - Indirect measures of number of pages visited, time on page, number of visits to website, etc.
  - Indicator of point of breakoff in a survey, missing data, time to complete, etc.
  - Permits targeted intervention and follow-up

Why are Paradata Important?

- Evidence of relatively low rate on long-term engagement in many Web-based programs
- Few repeat visits, relatively little time spend on the Website, relatively few of the pages visited
- Despite this, online interventions appear to be effective
- If we could increase exposure/dosage, could we improve outcomes?
- Measuring engagement (exposure, dosage) will help us identify what works and what does not
Paradata Example: Project Quit

- Strecher et al. (in press)
- Project Quit: Web-based smoking cessation program
- Participants recruited from 2 HMOs: 1,866 enrolled and randomized
- The program consisted of 5 sections focusing on various treatment components
- As a crude measure of engagement we measured the cumulative number of sections opened

Paradata Example: Project Quit Results

- Each section opened, on average, contributed to an 18% higher likelihood of quitting smoking (OR=1.18, CI=1.11 – 1.24)
- Participants with “heavy” use (3-5 sections opened) had a 6-month quit rate of 37.5%, while those with “light” use (0-2 sections opened) had a quit rate of 27.3% ($\chi^2=16.1$, p<.001)
- Smokers who opened fewer sections tended to have less formal education, were younger, and male.
Paradata Example: MENU

- Couper et al. (in preparation)
- MENU: Making Effective Nutritional Choices for Cancer Prevention
- Interactive Website to promote greater intake of fruit and vegetables
- Participants recruited from 5 HMOs: 2,540 enrolled and randomized to one of 3 arms
  - Untailored
  - Tailored
  - Tailored + HOBI (human online behavioral intervention)
- Follow-up surveys at 3, 6 and 12 months post-baseline

MENU Paradata Measures

- 4 different sessions delivered sequentially
- Participants could revisit earlier sessions
- In addition, up to 16 “special features” (e.g., recipes by Graham Kerr, a goal setting tool, tips for eating out, food safety and storage, fun with fruit and vegetables, and the like) were available to participants
- We use four indicators of engagement
  - Unique sessions (range 0-4)
  - Total sessions (range 0-51)
  - Total special features (range 0-50)
  - Total minutes (range 0-187)
MENU: Selected Indicators of Engagement by Arm

- Total sessions and unique sessions did not differ by arm
- Baseline measures not strongly correlated with breadth and depth of engagement
- Breadth and depth of engagement in the online materials has a strong effect on completion of the follow-up surveys or attrition in the study.

Web Survey Engagement

- Keeping respondents engaged in the survey is achieved by good design (see next session)
- Other ways to reduce breakoffs:
  - Keep survey as short and interesting as possible
  - Allow respondents to suspend and resume
  - Don’t force respondents to answer questions
  - Tell them up front what is expected
- In the Web survey design session we will (briefly) discuss progress bars/indicators to reduce breakoff and prompts to reduce missing data
Summary on Engagement

- Study participants are a precious resource
  - False belief that there are unlimited numbers of willing online participants
- Survey engagement is as important as program engagement
- Nonresponse – whether through initial unwillingness, early drop-out, attrition or missing data – threatens the inferential value of online studies
- Nonresponse is inevitable – goal is to minimize its extent and impact
- “Designing for nonresponse” is a perspective that explicitly deals with these issues at the outset, rather than after the fact
- Much to learn about nonresponse in online interventions

Thank You
Cited References