Designing Questions for Web Surveys: Effects of Check-List, Check-All, and Stand-Alone Response Formats on Survey Reports and Data Quality

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Current research question

- How do alternative response formats for presenting “multiple-answer” questions (lists) affect outcomes in a web survey?
  - Response formats: Check-list, check-all, stand-alone
  - Build on research comparing check-list and check-all formats in web surveys (Smyth et al. 2006, 2008; Thomas & Randall 2006) by adding stand-alone format
Check-list response format

Now I have a few questions about whether you spent any time reading, watching or listening to the news yesterday.

Yesterday, did you:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen to news on the radio?</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Watch news on TV?</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Receive news on your cell phone?</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Read news on the Internet?</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Listen to a news podcast?</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Read a print-version of a daily newspaper?</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
Now I have a few questions about whether you spent any time reading, watching or listening to the news yesterday. Check all the activities that you did.

Yesterday, did you:

- Listen to news on the radio
- Read a print-version of a daily newspaper
- Receive news on your cell phone
- Read news on the Internet
- Listen to a news podcast
- Watch news on TV
- I did not do any of these activities yesterday
Stand-alone response format

Now I have a few questions about whether you spent any time reading, watching or listening to the news yesterday.

Yesterday, did you read news on the Internet?
- Yes
- No

Yesterday, did you watch news on TV?
- Yes
- No

Yesterday, did you listen to news on the radio?
- Yes
- No

Yesterday, did you read a print-version of a daily newspaper?
- Yes
- No

Yesterday, did you receive news on your cell phone?
- Yes
- No

Yesterday, did you listen to a news podcast?
- Yes
- No
Methods: Study design

• Web survey of students’ media use and engagement in social activities

• Sample members
  • 12,005 randomly selected students at the University of Wisconsin-Madison
  • Recruited via an email invitation containing a URL link
  • Nonresponders received 2-3 email reminders

• 18.3% response rate (RR1)
  • Did not vary by experimental groups
Methods: Experiment

- Respondents randomly assigned to response format

<table>
<thead>
<tr>
<th>Format</th>
<th>Completes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-list</td>
<td>711</td>
</tr>
<tr>
<td>Check-all</td>
<td>766</td>
</tr>
<tr>
<td>Stand-alone</td>
<td>772</td>
</tr>
</tbody>
</table>

- 4 question series containing a total of 22 items

<table>
<thead>
<tr>
<th>Topic</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods for consuming news</td>
<td>6</td>
</tr>
<tr>
<td>Local publications viewed</td>
<td>5</td>
</tr>
<tr>
<td>Activities engaged in with parents</td>
<td>7</td>
</tr>
<tr>
<td>Other activities</td>
<td>4</td>
</tr>
</tbody>
</table>

- Question ordering
  - Each question series appeared in a fixed order
  - Items were randomized within a series
Outcomes

- Breakoffs
- Item-missing data
- Frequency of item endorsement ("yes" responses)
- Completion times
- Primacy effects
- Criterion validity
Results: Breakoffs

Predict

Because they impose more burden, levels of breakoffs will be higher for check-list and stand-alone formats than check-all formats.

![Breakoff Chart]

- **All breakoffs** (n = 425)
  - Check-list: 17.8%
  - Check-all: 15.0%
  - Stand-alone: 15.8%

- **Breakoffs at experimental questions** (n = 43)
  - Check-list: 1.6%
  - Check-all: 0.7%
  - Stand-alone: 2.7%
Results: Item-missing data

Predict

Levels of missing data will be higher for check-lists because some Rs will treat them like check-all formats and only mark “yes” responses.

![Bar chart showing missing data rates for different formats]

- Check-list: 8.0%
- Check-all: 2.5%
- Stand-alone: 5.6%

Any item-missing (%)
Results: Counts of “yes” responses across all 22 items

Predict

Levels of “yes” responses will be

– lowest in the check-all format because it promotes superficial processing

– highest in the stand-alone format because it promotes deeper processing

![Bar chart showing mean counts of “yes” responses]

- Check-list: 8.3
- Check-all: 7.67
- Stand-alone: 8.06
Results: Completion times across all 22 items

Predict

Completion times will be highest for the stand-alone format followed by the check-list then check-all format
Stand-alone vs check-list response format

Now I have a few questions about whether you spent any time reading, watching or listening to the news yesterday.

Yesterday, did you read news on the Internet?
- Yes
- No

Yesterday, did you watch news on TV?
- Yes
- No

Yesterday, did you listen to news on the radio?

Now I have a few questions about whether you spent any time reading, watching or listening to the news yesterday.

Yesterday, did you:

- Listen to news on the radio?
- Watch news on TV?
- Receive news on your cell phone?
Results: Completion times across all 22 items

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean Time/Number of Words (in Seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-list (224 Words)</td>
<td>0.37</td>
</tr>
<tr>
<td>Check-all (287 Words)</td>
<td>0.26</td>
</tr>
<tr>
<td>Stand-alone (426 Words)</td>
<td>0.25</td>
</tr>
</tbody>
</table>
Results: Primacy effects

Predict

Primacy effects will be lower for the stand-alone format followed by the check-list then check-all format

Average percent endorsing item in the 1st position

<table>
<thead>
<tr>
<th>Format</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-list</td>
<td>40.9%</td>
</tr>
<tr>
<td>Check-all</td>
<td>38.6%</td>
</tr>
<tr>
<td>Stand-alone</td>
<td>37.3%</td>
</tr>
</tbody>
</table>
Results: Criterion validity

- **Criterion**
  - “how often have you followed current events in the news?”
  - “how often have you participated in social activities?”

- **Predict**
  - If a response format predicts a stronger association between the criterion and an index, then the response format has higher criterion validity

- **Statistical tests**
  - Regressed the criterion on an index created for a question series controlling for response format and including interaction terms for index*response format

- **No differences across response formats**
Conclusions, limitations, and future directions

• Overall – “There’s no free lunch” (Singer, AAPOR 2011)
  • Breakoffs were less likely with the check-all format
  • Item missing data was rare but would have been more likely with check-list and stand-alone without checks
  • Higher levels of “yes” responses and longer completion times with the check-list
  • Stand-alone format reduced primacy effects
  • None of the formats was more valid

• Limitations
  • All Rs were college students
  • Behaviors asked about were neutral or socially desirable
    • Future research should examine sensitive behaviors
  • Attempted to examine validity
Thank You!

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