

# EFFECT OF BRANCHING MIDDLE RESPONSES IN DICHOTOMOUS POLAR SCALES IN WEB SURVEYS

11/30/2022

# Acknowledgements

- I would like to thank Drs. Richard Curtin, James Wagner, and Katherine McGonagle for their support. I also would like to thank Yingjia Fu, Peter Sparks, Gina-Qian Cheung, Ann Munster, Callie Cothorn, and Rachel Moloney for their technical assistance.

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# Background

- The major gap in practice and in the literature is that while middle position measurement is intensely investigated in general population telephone surveys, it is not widely studied in general population web surveys.
- Understanding how building a middle option into a question affects responses requires a broad perspective. With this understanding, researchers intensely investigated middle option effects in general population telephone surveys.
- The extensions from the telephone survey findings to web surveys need to take mode and question form differences.
- The literature focused on differences in response distributions by question form and respondent characteristics that are more likely to choose middle option.

# Background

- Study's scope:
  - Question scale that require respondents to choose **between two contrasting alternatives** in ongoing national surveys
  - Web surveys
    - Middle option effects are mostly studied in general population telephone surveys
  - Effect of branching middle option on
    - Marginal distributions
      - Expectation of no difference by question form (middle option offered vs. volunteered) in general population surveys can't be extended
    - Respondent's considerations to form a response
      - To the best of my knowledge, not have been studied before
    - Test-retest reliability

# Background - Dichotomous Polar Scales

- Dichotomous polar scales in ongoing national surveys
  - 2021 NATIONAL HEALTH INTERVIEW SURVEY (NHIS)
    - Compared with 12 months ago, would you say that you now receive more social and emotional support, less social and emotional support, or **about the same**?
    - Compared with the time before the coronavirus pandemic, would you say that you now feel more overwhelmed by the demands of living with diabetes, less overwhelmed, or **about the same as before the pandemic**?
  - 2021 GENERAL SOCIAL SURVEY (GSS)
    - During the last few years, has your financial situation been getting better, worse, or **has it stayed the same**?
    - In general, do the police (treat Whites better than Blacks, **treat them both the same**, or treat Blacks better than Whites/treat Blacks better than Whites, treat them both the same, or treat Whites better than Blacks)?
    - In general, do the police (treat Whites better than Latinos, **treat them both the same**, or treat Latinos better than Whites/treat Latinos better than Whites, treat them both the same, or treat Whites better than Latinos)?

# Background - Dichotomous Polar Scales

- Dichotomous polar scales in ongoing national surveys

- SURVEYS OF CONSUMERS

- We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?
- Now looking ahead--do you think that a year from now you (and your family living there) will be better off financially, or worse off, or **just about the same as now**?
- And 5 years from now, do you expect that you (and your family living there) will be better off financially, worse off, or **just about the same as now**?
- Would you say that at the present time business conditions are better or worse than they were a year ago?
- And how about a year from now, do you expect that in the country as a whole business conditions will be better, or worse than they are at present, or **just about the same**?
- How about people out of work during the coming 12 months--do you think that there will be more unemployment than now, **about the same**, or less?

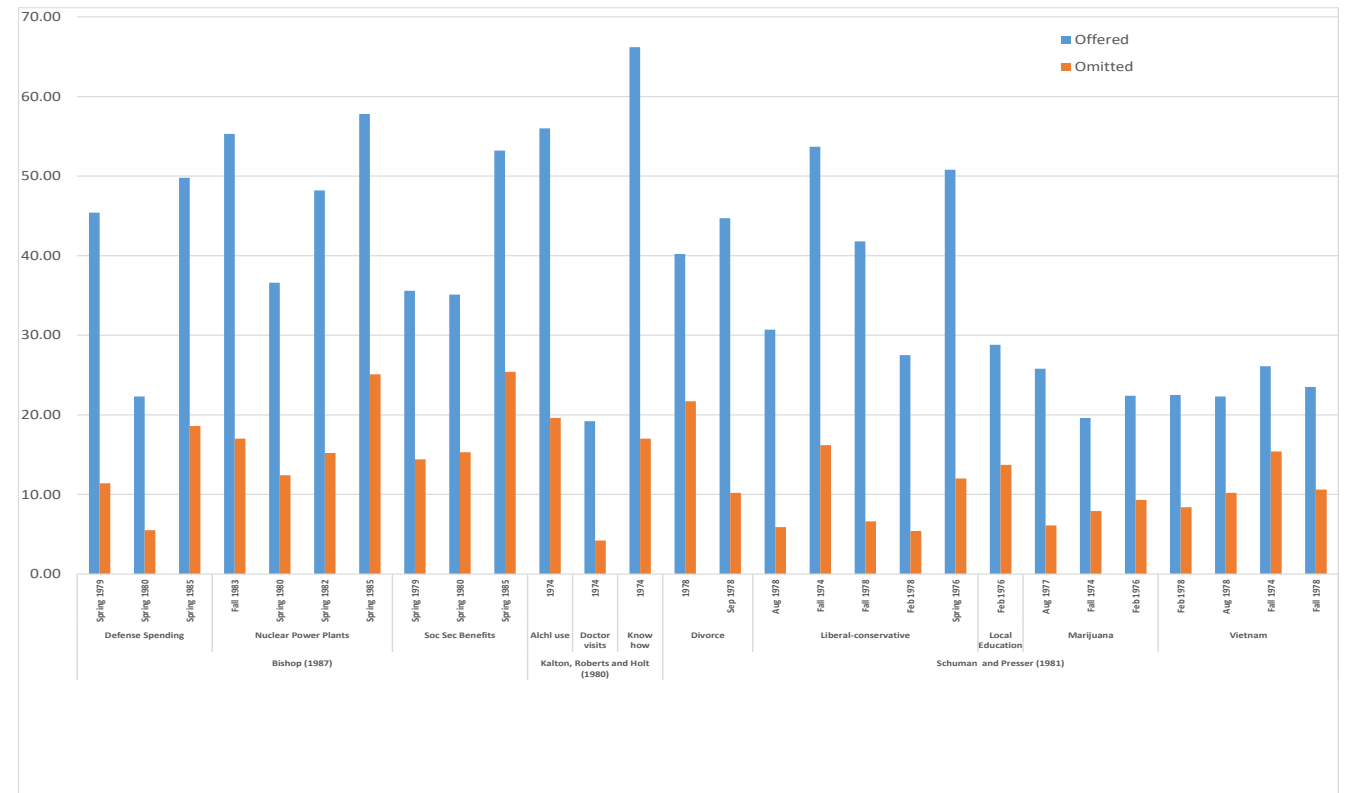
# Background

- There are variations in how the middle response option was presented across these questions
- Some of these variations have been studied mainly in telephone surveys previously
  - No explicit offer of middle option (in telephone surveys, middle responses can be captured when voluntarily mentioned) : middle-option offered vs. middle-option volunteered
  - Explicit offer of middle option
    - The wording of middle option: About the same, About the same before, Treat them both same [Schuman and Presser (1981) mentioned studying the effect of wording as one of the research avenues]
    - The placement of middle option: In the middle, at the end (Kalton, Roberts and Holt (1980); Bishop (1987) )
  - Topic (personal, policy, past or future, knowledge)



# Background – Summary of Findings from Current Literature

Effect of the Middle Option on Middle Responses: Offering middle response option in question wording increases percentage of people reporting middle responses compared to capturing voluntarily mentioned middle responses by between 11 to 49%



# Background – Summary of Findings from Current Literature

- More likely to be affected by question form (offered vs. volunteered)
  - People with lower attitude intensity and importance (Schuman and Presser, 1981; Krosnick and Schuman, 1988)
  - Lower and middle education groups (satisficing behavior) (Narayan and Krosnick, 1996)
- Likelihood to choose a middle response is related to social desirability bias (Sturgis et al., 2014).

# Background – Summary of Findings from Current Literature

- Specific question form recommendations to mitigate possible middle option effects:
  - Drop middle response option and measure intensity (Converse and Presser, 1986)
    - Assumes no differences by question form
    - Some people can still pick nonsubstantive responses instead of middle response
  - Branching middle option (Wang and Krosnick, 2020)
    - Eliminates a plausible point in the continuum
    - Validity is lower in a general population telephone study

# Background – Assumption of no differences by question form

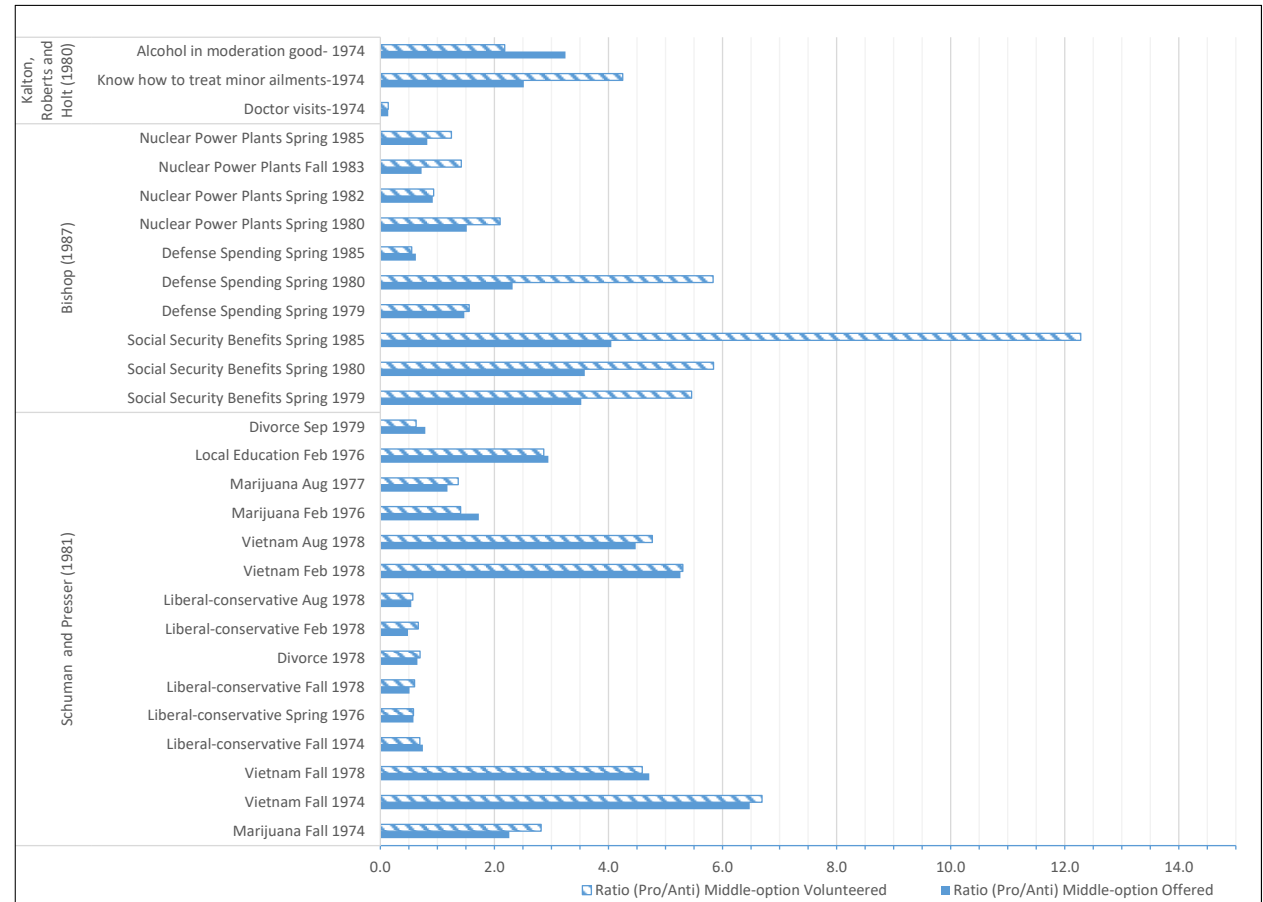
Mixed: Difference on marginal distributions by middle option offered vs. volunteered is not significant

Studies conducted by Schuman and Presser consistently concluded that question form did not have an impact on marginal distributions

Other studies concluded the results were mixed

Kalton et al. (1980) could not identify any subgroups that could be more receptive to question form while Bishop (1987) investigated the effects only at the aggregate level.

No clear explanation why that is the case



# Background – Summary of Findings from Current Literature

- The current literature neither documented the satisficing and social desirability behavior consistently nor connected it to significant marginal distribution differences by question form.
- But one can speculate that these systematic respondent behaviors could be the source of significant differences.

# Background

- Study's scope:
  - Question scale that require respondents to choose between two contrasting alternatives in ongoing national surveys
  - **Web surveys**
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  - Effect of branching middle option on
    - Marginal distributions
      - Expectation of no difference by question form (middle option offered vs. volunteered) in general population surveys can't be extended
    - Respondent's considerations to form a response
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    - Test-retest reliability

# Background – Middle-option Effects in General Population Web Surveys

- Middle option effects could be potentially different in general population web surveys compared to telephone surveys.
  - Visual presentation of a middle option could increase the saliency of the middle option
  - There are no interviewers in web surveys to detect signs of satisficing to encourage respondents to spend extra time and effort in giving a response
  - A middle option is either explicitly offered or not offered, and it cannot be registered in web surveys if a respondent offers it voluntarily as in the case of telephone surveys

# Background – Question Forms

- Considering two question forms that can be experimented with
  1. Omitting middle option question form and measure attitude intensity
    - Can't extend the no difference assumption to web surveys



# Background – Question Forms

## 2. Branching middle option:

- Potentially a follow-up can motivate low motivated respondents
- Can't investigate the respondent characteristics that are more gravitated towards middle option when offered to evaluate remedies but can investigate **effect of branching middle option on**
  - Marginal distributions
    - Expectation of no difference by question form (middle option offered vs. volunteered) can't be extended to general population surveys
  - Respondent's considerations to form a response
  - Test-retest reliability
- **Research Question 1:** Would branching middle alternative yield differences in marginal distributions and sets of considerations in a general population web survey?
- **Research Question 2:** Would branching middle alternative yield similar reliability in a general population web survey?

# Background

- Study's scope:
  - Question scale that require respondents to choose between two contrasting alternatives in ongoing national surveys
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  - **Effect of branching middle option on**
    - Marginal distributions
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# Sample and Recruitment Design

- Surveys of Consumers measure the consumer expectations to predict the economic outlook in the U.S.
- Monthly samples from Address Based Sampling (ABS) lists
- The survey invitations were mailed to 500 postal addresses each week from April 2018 to February 2019
- In addition to the ABS sample, a total of 700 respondents were contacted for a second interview after six months by mail and email when addresses were available.
- A \$2 USD cash incentive was sent to all sampled postal addresses with the initial invitation
- The average response rate (AAPOR RR2) was 19.63% and the average web completion rate was 31.49%.
- For the reinterview sample, the average completion rate was 65.65% and the web completion rate was 44.82%.

# Experimental Design

## Non-branching Question Form - Control

Q1a. We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?

1. Better now financially than a year ago
3. Same
5. Worse now financially than a year ago
9. DK (not explicitly shown)

Q1a\_followup. Why do you say so? \_\_\_\_\_

## Branching Question Form - Experimental

Q1b. We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?

1. Better now financially than a year ago
3. Same
5. Worse now financially than a year ago
9. DK (not explicitly shown)

Q1be. [IF Q1b=3] If you had to choose, would you say that you are closer to being better now or closer to being worse now?

1. Closer to better now financially than a year ago
5. Closer to worse now financially than a year ago
9. DK (not explicitly shown)

Q1bc. Personal Finances Recoded

1. Better now financially than a year ago (IF Q1b=1 or (Q1b=3 and Q1be=1))
3. Same (IF Q1b=3 and Q1be=9)
5. Worse now financially than a year ago (IF Q1b=5 or (Q1b=3 and Q1be=5))
9. DK (not explicitly shown)

Q1bc\_followup. Why do you say so? \_\_\_\_\_

# Questionnaire Design

- In the questionnaire, there were 40 core questions about the economic expectations in addition to socio-demographic questions.
- The question of interest is the first question in the series of questions that ask about respondents' opinions on their personal finances, business conditions and inflation expectations.
- The questionnaire was designed for both large and small device screens in Blaise (Statistics Netherlands).

# Open-ended Response Coding

- The personal finances question was followed up by an open-ended question asking about the respondent's considerations as they answered the question in both forms.
- The responses to the open-ended question were independently coded by two coders based on the existing code frame.
- Each open-ended response was coded with up to two considerations .
- Then the coders discussed and resolved any discrepancies.

# Sample Description

- The sample was older, wealthier and more educated compared to the U.S. householder population.
- The vast majority of respondents (91.4%) accessed the survey by typing the URL from the invitation letter and completed it on a PC.
- Control group (received non-branching question form): 602 completes
- Experimental group (received branching): 589 completes

# Percentage of Break-offs at Question Level and Overall by Experiment Groups

|   | Control Group<br>(Received Non-branching<br>Question Form) |      | Experimental Group (Received<br>Branching Question Form) |       |
|---|--|------|--|-------|
|   | n  | %    | n  | %     |
| Break-offs at the first question  | 5  | 0.59 | 7  | 1.02  |
| Break-offs at any part of the<br>questionnaire before the end of<br>survey screen | 63   | 9.35 | 80   | 11.70 |
| Total*  | 674  |      | 684  |       |

\* This is based on anyone who logged into the survey successfully.



# Differences in Marginal Response Distributions and Standard Errors (SEs) for Personal Finances Compared A Year Ago by Experiment Groups

|            | Experimental Group (Received Branching Question Form) |       | Control Group (Received Non-branching Question Form) |       | Dif (Experimental- Control) |              |         |
|------------|---|-------|--|-------|-----------------------------|--------------|---------|
|            | n   | %     | n  | %     | Percentage Points (SE)      | t-calculated | p-value |
| Better     | 388   | 66.67 | 234  | 67.63 | -0.96 (3.19)                | -0.30        | 0.763   |
| Worse      | 194   | 33.33 | 112  | 32.37 | 0.96 (3.19)                 | 0.30         | 0.763   |
| Same*      | 6   | -     | 255  | -     |                             |              |         |
| Don't know | 1   | -     | 1  | -     |                             |              |         |

\* Percentage of middle responses is 40.58% and 42.36% in experimental and control groups respectively.

# Considerations Mentioned For the Follow-Up Open-ended Question

| <b>Experiment Group</b>                               | <b>n</b> | <b>% of No Mentions</b> |
|---|----------|-------------------------|
| Experimental Group (Received Branching Question Form) | 589      | 3.40                    |
| Control Group (Received Non-branching Question Form ) | 602      | 11.63                   |
| Dif (Experimental- Control) (SE)                      |          | -8.23 (1.51)            |
| Significant at 95% confidence level                   |          | *                       |

# Considerations Mentioned For the Follow-Up Open-ended Question

| Personal Finances Compared a Year Ago                   | Experimental Group<br>(Received Branching<br>Question Form ) (n=582) |      | Control Group<br>(Received Non-<br>branching Question<br>Form )<br>(n=346) |      | Difference  |         |
|---|--|------|--|------|-------------|---------|
|   | %  | SE   | %  | SE   | t-statistic | p-value |
| Better than a year ago                                  |  |      |  |      |             |         |
| Income higher   | 35.64  | 2.12 | 42.20  | 2.98 | -1.79       | 0.07    |
| Increased HH contribution                               | 2.87   | 0.69 | 3.47   | 0.98 | -0.50       | 0.62    |
| Assets higher   | 14.02  | 1.43 | 12.72  | 1.79 | 0.57        | 0.57    |
| Debt lower  | 9.80   | 1.22 | 10.98  | 1.68 | -0.57       | 0.57    |
| Expense lower   | 4.05   | 0.81 | 5.49   | 1.23 | -0.98       | 0.33    |
| Worse than a year ago                                   |  |      |  |      |             |         |
| Income lower  | 16.89  | 1.63 | 17.63  | 2.17 | -0.27       | 0.79    |
| Decreased HH contribution                               | 1.86   | 0.56 | 3.47   | 0.98 | -1.42       | 0.15    |
| Assets lower  | 2.70   | 0.67 | 2.31   | 0.81 | 0.37        | 0.71    |
| Debt higher   | 3.21   | 0.80 | 3.47   | 0.98 | -0.20       | 0.84    |
| Expense higher  | 5.24   | 0.98 | 4.62   | 1.13 | 0.41        | 0.68    |
| Higher prices   | 12.16  | 1.34 | 12.72  | 1.79 | -0.25       | 0.80    |
|   |  |      |  |      |             |         |
| Income higher-Income lower                              | 18.75  | 3.03 | 24.57  | 4.23 | -1.12       | 0.26    |
| (Assets higher+Debts lower)-(Assets lower+Debts higher) | 17.91  | 2.21 | 17.92  | 3.02 | 0.00        | 1.00    |

# Gross Difference Rates by Question Form

| Response Category | Experimental Group<br>(Received Branching<br>Question Form) |     | Control Group (Received<br>Non-branching Question<br>Form) |     |
|-------------------|---|-----|--|-----|
|                   | (n=67)  |     | (n=55)   |     |
|                   | %   | SE  | %  | SE  |
| Better            | 20.9  | 3.2 | 21.8   | 3.3 |
| Worse             | 20.9  | 3.2 | 27.3   | 3.0 |
| Same              |   |     | 12.7   | 3.5 |

# Conclusions and Future Research

- This study presents some evidence that a branching question form reduced the effect of offering a middle alternative without changing the validity of responses in a general web survey.
- It also showed that the branching question form did not change the respondents' considerations behind their answers to the personal finances question compared to non-branching form.
- Furthermore, the reliability, measured by gross difference rate was not significantly different by question form.
- A more systematic study of middle position measurement in web surveys is required.
- Web surveys offer interactive features that can help to mitigate in a more focused way.

# Thank you!

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# References

- Bishop, G. E./Hippler, H.-J./Schwarz, N./Strack, F. (1988). "A Comparison of Response Effects in Self-Administered and Telephone Surveys." Telephone Survey Methodology. R. M. Groves, P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nicholls II, and J. Waksberg (Eds). Hoboken, NJ: Wiley Series in Survey Methodology, pp. 321-356.
- Kalton, G./Roberts, J./Holt, D. (1980). "The Effects of Offering a Middle Response Option with Opinion Questions." Journal of the Royal Statistical Society 29(1) pp. 65–78. doi:10.2307/2987495
- Schuman, H./Presser, S. (1981). "Questions and Answers in Attitude Surveys Experiments on Question Form, Wording, and Context." New York, NY: Academic Press, Inc.
- Statistics Netherlands. <https://blaise.com/blaise/about-blaise>
- Sturgis, P./Roberts C./Smith, P. (2014). "Middle Alternatives Revisited: How the neither/nor Response Acts as a Way of Saying 'I Don't Know'?" Sociological Methods and Research 43(1) pp. 15–38. doi:10.1177/0049124112452527
- Wang, R./Krosnick, J. A. (2020). "Middle alternatives and measurement validity: a recommendation for survey researchers." International Journal of Social Research Methodology 23(2), pp. 169–184. doi:10.1080/13645579.2019.1645384