Experimental Design for Recommendation Bundling

Giampaolo Bonomi*

1 Population

Respondents are recruited using *CloudResearch* (Mturk Toolkit). Besides meeting the default quality standards of CloudResearch's Approved List, passing the additional quality checks provided by CloudResearch, and satisfying the participation requirements of Mturk, respondents are required to be from the United States, have been approved a minimum of 500 HITs and have an approval rate of 95% (The requirement was initially meant to be 1000 HIT, but it was lowered to reach a larger pool of respondents). Because of the difficulty of reaching more than 5,000 respondents on Cloud Research satisfying these requirements, the data collection is moved to *Prolific* after the first 5,000 respondents.

2 Experiments and Treatment Arms

An experiment is identified by the pairs of policy recommendations bundled together in its main treatment. We describe the set of treatment arms for policy recommendation pair (R^X, R^Y), where X and Y represent different policy dimensions. For instance, when X is abortion policy and Y trade policy, the recommendations considered in the corresponding experiment will be

R^X: *"Abortion cannot be a free choice, it must be either illegal or strongly discouraged by law. Exceptional situations might need special attention, but the life of the unborn is a gift of God and needs to be protected."*

*Department of Economics, UC San Diego. Email: gbonomi@ucsd.edu

R^Y: *"Regarding the CPTPP, the trade deal is by large against the interest of our country. It would destroy US jobs and increase economic insecurity. The US should stay out of the CPTPP."*

Experiment (R^X, R^Y) consists of the following phases.

2.1 Phase 1: demographics

After a standard informed consent page, respondents will be asked to provide information about the following demographics.

- Religious group
- Importance of religion in life
- Party identity
- Educational Attainment

2.2 Phase 2: policy information

In this section, respondents read a short informative script on policies X and Y. For instance, the following script would apply to the case of abortion policy and the CPTPP trade deal.

The next part of the survey is about the following policy issues.

1. *Abortion Laws. Whether abortion should always be a free choice, the law should impose restrictions on abortion, or it should make it always illegal.*
2. *The CPTPP. Whether the United States should join the CPTPP, a comprehensive international trade treaty aimed at regulating and facilitating international trade between its member countries.*

After reading the script, participants answer an attention check that verifies that they have indeed paid attention to the information. Then, they are asked the following questions for each of the two policy issues. Answers are given on a 7-point Likert scale.

- How important are the following policy issues to you?

- How certain are you about the best policy to adopt regarding the following topics?

2.3 Phase 3: Treatment Arms

Each experiment consists of at most two recommendation spillover directions, "R^X to R^Y" and "R^Y to R^X." We provide the structure of the "R^X to R^Y" treatment arms. The "R^Y to R^X" direction consists of similar treatment arms, except that the recommendation roles in the below description are switched.

Respondents are randomly assigned to the following treatment arms:

No recommendation condition Respondents are asked about their policy preference on issues X and Y. In our example, they answer the following two questions:

1. Do you support or oppose laws imposing strict restrictions on abortion/making abortion illegal?
2. Do you support or oppose the US participation into the CPTPP?

Answers are on a 4-point scale [strongly oppose, somewhat oppose, somewhat support, strongly support]. Between the two questions, respondents are asked filler demographic questions. In the case of abortion, they are:

1. Race group
2. Age group

Condition R^Y only Respondents are asked about their policy preference on issues X and Y. In our example, they answer the following two questions:

1. Do you support or oppose laws imposing strict restrictions on abortion/making abortion illegal?
2. Do you support or oppose the US participation into the CPTPP?

Answers are on a 4-point scale [strongly oppose, somewhat oppose, somewhat support, strongly support]. Between the two questions, respondents are asked about the following:

1. Race group

2. Age group

Right after the age question but before the CPTPP question, respondents are presented the following script:

You are going to read a short passage from a political speech. Please read carefully.

"Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

Condition R^X plus R^Y Respondents are asked about their policy preference on issues X and Y. In our example, they answer the following two questions:

1. Do you support or oppose laws imposing strict restrictions on abortion/making abortion illegal?

2. Do you support or oppose the US participation into the CPTPP?

Answers are on a 4-point scale [strongly oppose, somewhat oppose, somewhat support, strongly support]. Between the two questions, respondents are asked about the following:

1. Race group

2. Age group

Right after the age question but before the CPTPP question, respondents are presented the following script:

You are going to read a short passage from a political speech. Please read carefully.

"Abortion cannot be a free choice, it must be either illegal or strongly discouraged by law. Exceptional situations might need special attention, but the life of the unborn is a gift of God and needs to be protected. [...] Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

2.4 Phase 4: End of Survey Demographics

Respondents will be asked to provide information about the following demographics.

- Income class
- Employment Status
- Gender

3 Hypotheses Tested

We consider comparisons of the following type, using the sample of all respondents assigned to any of the three conditions of section 2:

$$SupportY_i = \beta_0 + \beta_1 SupportX_i + \beta_2 R_i^Y + \beta_3 R_i^{X+Y} + \beta_4 SuportX_i \times R_i^Y + \beta_5 SupportX_i \times R_i^{X+Y} + \varepsilon_i,$$

where $SupportPolicyY_i$ is a dummy equal to 1 if respondent i expresses an opinion aligned with policy recommendation R^Y, $SupportPolicyX_i$ is a dummy equal to 1 if respondent i expresses an opinion aligned with policy recommendation R^X, R_i^Y is a dummy equal to 1 if respondent i is in the arm where only R^Y is sent, R_i^{Y+Y} is a dummy equal to 1 if i is in the arm where both R^X and R^Y are sent bundled together.

We test the following hypotheses about the effect of bunding issues together relative to sending R^Y alone:

1. Bundling generates disagreement spillovers from X to Y: $\beta_3 < \beta_2$
2. Bundling generates agreement spillovers from X to Y: $\beta_2 + \beta_4 < \beta_3 + \beta_5$
3. Bundling generates backlash on Y if respondents disagree on X: $\beta_3 < 0$

In addition, we study the following hypotheses:

- The coefficient differences implied by hypotheses 1-3 are larger (smaller) if X (Y) is a social policy issue and Y (X) an economic policy issue.

- The coefficient differences implied by hypotheses 1-3 are larger (smaller) if X (Y) is important or well-known to respondent i and Y (X) is less important or less known to respondent i.

4 Robustness

Robustness exercises will include the following:

- Perform the type of experiment outlined in section 2, except that before treatment arms R^Y only and R^X only the source partisan affiliation is revealed. For instance, the "R^Y only" and "R^X plus R_Y" condition messages might read, respectively:

  You are going to read a short passage from a political speech of a Democrat. Please read carefully.

  "Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

  You are going to read a short passage from a political speech of a Democrat. Please read carefully.

  "Abortion cannot be a free choice, it must be either illegal or strongly discouraged by law. Exceptional situations might need special attention, but the life of the unborn is a gift of God and needs to be protected. [...] Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

  The best way to control for inferences about the source partisanship while maintain the message bundle credible in cases where one of the stances runs counter to the one typical of a party, seems to present the message as originating from a non-partisan source. For instance:

  You are going to read a short passage from a political speech. The source is not affiliated with any political party. Please read carefully.

"Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

You are going to read a short passage from a political speech. The source is not affiliated with any political party. Please read carefully.

"Abortion cannot be a free choice, it must be either illegal or strongly discouraged by law. Exceptional situations might need special attention, but the life of the unborn is a gift of God and needs to be protected. [...] Regarding trade policy, joining the CPTPP would undeniably boost our economy, create new jobs, and lower consumer prices. The US should join the CPTPP, and do it as soon as possible."

The robustness check entails testing hypotheses 1-3 after the treatment conditions of section 2 have been replaced by the ones indicated above.

- Adding a R^X only condition, to estimate the following regression.

$$\begin{aligned} SupportY_i = \beta_0 + \beta_1 SupportX_i + \beta_2 R_i^Y + \beta_3 R_i^{X+Y} + \\ \beta_4 SuportX_i \times R_i^Y + \beta_5 SupportX_i \times R_i^{X+Y} + \beta_6 R_i^X \\ + \beta_7 SupportX_i \times R_i^X + \varepsilon_i, \end{aligned}$$

  which allows us to control for the potential confounding effect of showing message R^Y alone on respondent's support for the policy Y recommendation.

- To avoid order effects, whenever more than one policy recommendation is shown in the same treatment message, their order is randomized.

5 Sample Size

Each of the main treatment arms of section 3 is assigned roughly 450 respondents. The initial goal was having 600 respondents per arm, but this turned out not feasible as survey participation slowed down remarkably, and reaching more than 5,000 high-quality respondents on Cloud Research with a pay of 1$ for a 4-minute

survey turned out not feasible. The sample will be refined based on attention checks, and Qualtrics' bot detectors.

6 Policies

The experiment will be repeated using different messages to play the role of R^Y and R^X. In particular, bundled messages will cover policy issues that some of the following, based on funding:

- Abortion policy
- Trade policy
- Race-based affirmative action
- Medicare drug price negotiations
- Transgender Rights
- Tax Policy

The Transgender Rights and Tax policy bundle seems of particular interest because (1) the first policy captures a value-based cleavage with no economic implication. (2) Taxation policy is one of the most "classic" economic policies, one that is typically of relatively intuitive interpretation and associated with economic identities (e.g. working class vs upper class). We can then see if disagreement spillovers arise from cultural issues to economic issues, from economic issues to cultural issues, or in both directions. If funding permits other pairs (e.g. race and drug price negotioations) will be tested.