

Survey Experiments

Jake Bowers, Nahomi Ichino and Maarten Voors

09 June, 2022

Overview: Why, What, When Survey Experiments

Example Treatments for Causal Inference

Examples for Measurement

General Considerations in Interpreting Results from Survey Experiments

Overview: Why, What, When Survey Experiments

Key points for this lecture I

- ▶ A survey experiment involves a randomized experiment within a survey. See [10 Things to Know About Survey Experiments](#). See also Mutz (2011). See also [Time Sharing Experiments in the Social Sciences](#).
- ▶ Two types:
 - ▶ For **measuring** otherwise hard to measure concepts: “Hostility toward female candidates”, “Anti-black prejudice”, “Willingness to pay”
 - ▶ For **causal inference** to learn about a theory (of attitudes, of behavior (when people are offered a behavioral outcome), beliefs, judgement).
- ▶ How?
 - ▶ All survey modes can have randomization of content to display to respondents.

Key points for this lecture II

- ▶ Randomization is much easier if you use a tablet or online or otherwise computer aided survey. (But you can do simple randomization with paper questionnaires.)
- ▶ Why or When?
 - ▶ You want to learn about theories that explain attitudes, beliefs, behaviors of lots of people.
 - ▶ A focus on individual people and what they say and can do in the context of a survey.
 - ▶ Sometimes the **sample** of people contacted in a survey **represents** a population well. (Say, if the sample is random.)
 - ▶ Survey experiments done online can be cheap.
 - ▶ Computer aided survey experiments can allow large scale access to lab experiment-style research.

Example Treatments for Causal Inference

Photos and Ballots

CANDIDATOS INDEPENDIENTES A LA GUBERNATURA DE NAYARIT




		
José Ramírez	Pedro González	Javier Núñez
Proposals: <ul style="list-style-type: none">-Raise taxes on the wealthy to increase social spending-Close factories that pollute the environment-Offer government support to all state cultural and sports associations-Increase subsidies to farmworkers in the state	Proposals: <ul style="list-style-type: none">-Keep taxes and social spending at their current levels-Tax polluting factories to raise funds for the environment-Offer scholarships funded by the government and private businesses to the best cultural and sports associations-Provide farmworkers with information about the current agricultural subsidies	Proposals: <ul style="list-style-type: none">-Decrease taxes on everyone and decrease social spending-Attract new factories first, worry about the environment later-Let state cultural and sport associations support themselves with private money-Eliminate agricultural subsidies so that farming can become more competitive

Fig. 1 Ballot shown to subjects, with pictures of the candidates included. Subjects in the control condition saw the same ballot, with the images removed. Subjects in the three treatment conditions saw a ballot with one of the images sets shown in Fig. 2. The title of the image reads: *Independent candidates for the governorship of Nayarit*

Outcome: Candidate Choice (Aguiler et al 2018).

Photos and Ballots



Fig. 2 Pictures shown in the three experimental conditions. The first row shows the phenotypically white candidate, the second row the phenotypically mestizo candidate, and the third row the phenotypically indigenous candidate. The control condition provided the same candidate statements, but no images

TABLE 2. Transcripts of Counter-Stereotypic Advertising Manipulation			
Narrative	Deserving Blacks	Deserving Whites	Undeserving Whites
<i>George W. Bush, dedicated to building an America with strong values</i>	George Bush in crowd shaking hands, black woman with American flag in the background, black veteran smiling	George Bush in crowd shaking hands	George Bush in crowd shaking hands Image of Statue of Liberty
<i>Democrats want to spend your tax dollars on wasteful government programs, but George W. Bush will cut taxes because you know best how to spend the money you earn.</i>	Treasury building Bush sitting on couch, black person laying money on a counter	Treasury building Bush sitting on couch, white person writing a check, white person counting money	White person counting money, white mother and child in office Bush sitting on couch, residential street (no people)
<i>Governor Bush cares about families.</i>	Black family using a computer, black family eating at a restaurant	White teacher, white parents walking with child	Residential street (shot continued as above)
<i>He'll reform an unfair system that only provides health care for some, while others go without proper treatment because their employer can't afford it.</i>	Laboratory workers (race unclear) looking into microscopes Black women holding baby	Laboratory workers (race unclear) looking into microscopes White mother holding child	White mother holding newborn receiving care in hospital Medical files
<i>When he's president, every hard-working American will have affordable, high-quality health care.</i>	Bush shaking hands with black children, black kids sitting in school yard, Bush sitting in classroom reading with black kids	Bush talking to white family, Bush talking to white child, Bush kissing white girl	X-rays against lit background
<i>George W. Bush, a fresh start for America</i>	Bush, arm around wife. Screen reads "George W. Bush" and "A Fresh Start"	Bush, arm around wife. Screen reads "George W. Bush" and "A Fresh Start"	Bush, arm around wife. Screen reads "George W. Bush" and "A Fresh Start"

Outcome: Candidate preference (Gore vs. Bush).

(Valentino et al, 2002)

Vignette

Effect of a set of information about corruption on support for politicians:

Imagine a person named Gabriel (or Gabriela), who is a person like you, living in a neighborhood like yours, but in a different city in Brazil. The mayor of Gabriel's city is running for reelection in October. He is a member of the PT [Partido dos Trabalhadores] (or PSDB [Partido da Social Democracia Brasileira]). In Gabriel's city, it is well known that the mayor never takes bribes (or frequently takes bribes) when giving out government contracts. The mayor has completed few (or many; or omit the entire sentence) public works projects during his term in office. In this city, the election for mayor is expected to be very close.

(Winters and Weitz-Shapiro, 2013)

Conjoint

Suppose there is a primary in your party for an open seat for the U.S. House of Representatives and the two individuals below are considering running. We'd like you to consider the following two potential candidates for this office.

Please review the following two resumes:

	Candidate 1	Candidate 2
Number of Children	3	3
Gender	Female	Male
Number of Years in Politics	3 years	8 years
Current Occupation	Mayor	Corporate Lawyer
Age	65	65
Spouse's Occupation	Farmer	Farmer

Based on the limited information above, which of the two candidates would you be more likely to support in the congressional primary?

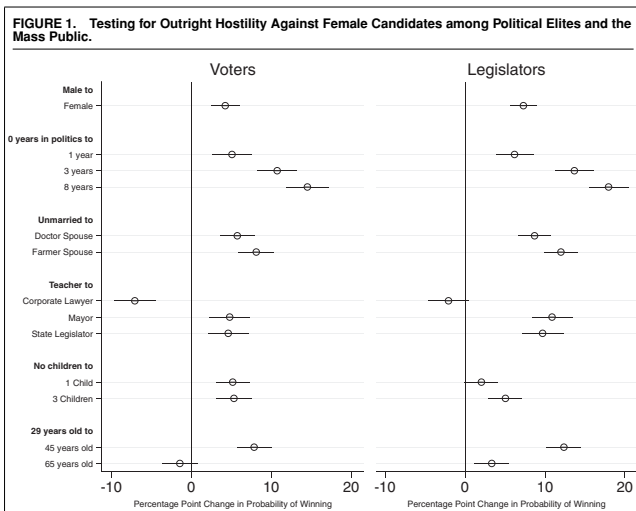
Candidate 1Candidate 2



Attribute	Values
Gender	Female, Male
Age	29, 45, 65
Number of Children	0, 1, 3
Current Occupation	Corporate Lawyer, Third Grade Teacher, Mayor, State Legislator
Number of Years in Politics	None, 1 year, 3 years, 8 years
Spouse's Occupation	Doctor, Farmer, Unmarried

(Teele et al 2018)

Conjoint



(Teele et al 2018)

Conjoint Interpretation

FIGURE 1. Testing for Outright Hostility Against Female Candidates among Political Elites and the Mass Public.



When randomly assigned to one hypothetical candidate with “female” and another with “male”, more people will choose the “female” candidate than the “male” candidate. (The effect of seeing “female” averaging over seeing the other attributes.

Examples for Measurement

Measurement of Concepts in General

Say we want to measure “math ability”. We could

- ▶ watch people pay for coffee and make change (a behavioral measure capturing one aspect of math ability).
- ▶ ask people on a survey “What is $2+2$?”
- ▶ ask people on a survey “Solve for x in $y = x/2$.”
- ▶ ask people **both** questions.

Often surveys allow multiple questions to measure concepts more cheaply and quickly than watching behavior (Trading off measuring one concept well versus other concepts less well.)

If the survey sample is representative, we learn about prevalence of a given concept in a population.

For more on measurement in experiments (including field experiments) see [10 Things to Know About Measurement in Experiments](#)

Measurement of Sensitive Topics: Example of the List Experiment

Now I am going to read you three things that sometimes make people angry or upset. After I read all three, just tell me HOW MANY of them upset you. I don't want to know which ones, just HOW MANY.

- (1) the federal government increasing the tax on gasoline
- (2) professional athletes getting million-dollar contracts
- (3) large corporations polluting the environment
- (4) *a black family moving in next door* (randomly assigned to half of the respondents)

Baseline Condition: Only 3 items

Sensitive Item Condition: Add the “black family” item (4 items total)

Outcome: Did more people choose 4 items in the “sensitive item”?
(Kuklinski 1997)

For more on measurement of sensitive topics in survey experiments see [10 Things to Know About Survey Experiments](#).

General Considerations in Interpreting Results from Survey Experiments

Considerations in Interpreting the results of Survey Experiments

Are the survey respondents “pre-treated” by the political, social, informational context?

Example:

Treatment: The researcher in June of 2022 randomly assigns people to learn that Russia has invaded Ukraine.

Outcome: Attitudes toward Russia.

Did the researcher learn about the effect of information about invasions on attitudes toward the invader? What if this experiment had been done in 2013? Or 2015 (just after the invasion of Crimea)?

Compliance and Non-Randomized Comparisons

Did the respondent **understand** and/or **absorb** or otherwise **attend to** the treatment (Manipulation checks; Attention Checks).

For example, this Attention Check:

There are many important issues facing our country today. Research shows that issues people think are important can affect their views on other issues. We also want to know if you are paying attention. Please ignore the question and put "crime" in the top position and "unemployment" in the bottom position. Leave the rest of the issues in the same order.

Please rank the following issues facing the nation from 1 (most important) to 7 (least important). You can change your rankings by dragging and dropping different issues.

- Health care
- Unemployment
- The federal budget deficit
- The Afghanistan war
- Crime
- Education
- Relations with other countries

(Berinsky et al, 2019)

Compliance and Non-Randomized Comparisons

Did the respondent **understand** and/or **absorb** or otherwise **attend to** the treatment (Manipulation checks; Attention Checks).

For example a Manipulation Check done after the survey might say:
“Was the name of the person in the vignette you just read (a) Maarten (b) Gabriella (c) Jake or (d) Nahomi?”

Questions:

- ▶ What should you do if 25% of your respondents fail the Manipulation Check?
- ▶ Should your attention check come before or after randomization? What should you do with people who fail an attention check?

Moderation and Post-Treatment Bias

If the theory implies a moderated relationship (high and low income respondents should react differently to the randomized tax rate), is the moderator asked **after** or **before** the treatment during the survey?

If **after** could the treatment possibly affect the moderator?

You might mislead yourself if you calculated different effects by subgroups where subgroup membership is caused by treatment. (If all treated subjects report high income and all control subjects report low income, then an analysis of treatment effects within subgroup is no longer a randomized comparison — and in this case would just return NA values.)

Lack of information equivalence and SUTVA Violations

Not everyone understands the treatment the same way (Dafoe et al 2018): (from Bowers 1998):

Table 1: Black Threat Question Wording

CULTURAL	
Low Threat	High Threat
Some leaders in the Black community feel that American youth should be able to learn about black history in school. To remedy this, it has been proposed that high school courses include some information on African-American history. Do you favor or oppose this proposal?	Some leaders in the black community feel that American youth should be educated about black history. To remedy this, it has been proposed that high schools require students to take a course in African-American history. Do you favor or oppose this proposal?
POLITICAL	
Some Black leaders are worried that the government does not pay enough attention to the opinions of Blacks. To remedy this, it has been proposed that governors do more to find out about the opinions of Black citizens. Do you favor or oppose this proposal?	Some Black leaders are worried that the government does not pay enough attention to the opinions of Blacks. To remedy this, it has been proposed that governors be required to appoint more Blacks to public office. Do you favor or oppose this proposal?
ECONOMIC	
Studies show that Blacks have a much higher unemployment rate than Whites. To remedy this, it has been proposed that large businesses try to hire more Blacks. Do you favor or oppose this proposal?	Studies show that Blacks have a much higher unemployment rate than Whites. To remedy this, it has been proposed that large businesses be required to hire at least 15% Blacks. Do you favor or oppose this proposal?

Lack of information equivalence and SUTVA Violations

Not everyone understands the treatment the same way (Dafoe et al 2018): (from Bowers 1998):

Table 2: Christian Fundamentalist Threat Question Wording

CULTURAL	
Low Threat	High Threat
Some Christian Fundamentalist leaders feel that American youth should be more aware of the role of Christians in American history. To remedy this, it has been proposed that high school courses include some information about the role of Christians in American history. Do you favor or oppose this proposal?	Some Christian Fundamentalist leaders feel that American youth should understand that this is a Christian nation. To remedy this, it has been proposed that high schools require students to take a course that shows how Christians and Christian principles were responsible for the founding of our country. Do you favor or oppose this proposal?
POLITICAL	
Some leaders of Christian groups are worried that the government does not pay enough attention to the concerns of Christian Fundamentalists. To remedy this, it has been proposed that governors do more to find out the opinions of Christian Fundamentalists. Do you favor or oppose this proposal?	Some Christian Fundamentalist leaders are worried that the government does not pay enough attention to the opinions of Christian Fundamentalists. To remedy this, it has been proposed that governors be required to appoint more Christian Fundamentalists to public office. Do you favor or oppose this proposal?
ECONOMIC	
Some Christian Fundamentalist leaders have become concerned about the financial well-being of Christian schools. To remedy this, it has been proposed that Christian schools not have to pay property taxes. Do you favor or oppose this proposal?	Some Christian Fundamentalist leaders are concerned about the financial well-being of Christian schools. To remedy this, it has been proposed that Christian schools receive money from local property taxes, just like the public schools. Do you favor or oppose this proposal?

Other issues of interpretation I

- ▶ Do interpretations of the treatment depend on other questions asked previously? (Not a problem of bias, but of interpretation) See Norbert Schwarz and book by Tourganeau on question order, on the survey context, etc. (How do survey respondents interpret and learn from the response options? Or from the framing of the question? Or from the order of the questions?)
- ▶ What are alternative arguments about the **meaning** of the treated-to-control comparison? (Does hearing “Gabriel” or “Gabriela” raise certain considerations in respondents’ minds that would change if they were asked about “Jens Olaf” or “Shuyuan”?)
- ▶ Remember that a treatment effect is a comparison of two groups — in survey experiments the “control” condition tends not to be a status quo condition. Does this matter for for **this experiment**?

Other issues of interpretation II

- ▶ Does it matter that the effect of exposure to a survey treatment might go away within minutes or seconds? Does it matter (and how and when) that the outcome of a survey experiment is often measured within seconds or minutes of the treatment? Can a short duration effect teach us about theory?
- ▶ Many online experimental pools are not representative samples. When might this matter? When might this not matter?
- ▶ How to interpret experimental comparisons with no natural control group? Should Winters and Weitz-Shapiro have had a pure control condition? Or could the difference in *time* or *effort* between a survey requiring someone to read a vignette and a survey that skips the vignette confuse interpretation of the findings?

Other issues of interpretation I

- ▶ **Conjoint Experiments** Multiple comparisons problems and the false positive rate (Even if there are no effects, we should see 1 out of 20 95% confidence interval excluding 0.)
- ▶ **Conjoint Experiments** The effect is an average over the scenarios: What does no effect of “mexican” on immigration preference mean? (Average over preferences given existing stereotypes (“less than high school education”, “poor”) (negative effects) and counter-stereotypes (“phd”, “wealthy”) (positive effects).)

Other issues of interpretation I

- Issues of item order and relationships among items in List and Conjoint experiments.

Imagine (building on Garcia-Sanchez and Queirolo, 2021.)

I am going to show you a card in which there are mentioned various products, and I would like to ask you to tell me HOW MANY of these products you consume. Please tell me HOW MANY you consume. Do not tell me WHICH of these things you consume. Please give me a NUMBER Alcohol, Yerba mate [in Uruguay]/Coffee [in Colombia], Marijuana [excluded in the control group], Tobacco

Adding “Marijuana” changes the interpretation of the other items: am I reporting the amount of “unhealthy actions”? Or amount of “ordinary consumption”?

Other issues of interpretation II

(The actual study added “Shark cartilage” as a more rare item to ensure that few people would say that they consumed all of the items)

Realism and Learning about Theory

What do we learn from survey respondents' short term reactions to hypothetical choices and situations?

"In your opinion, what is the likelihood that Gabriel(a) will vote for this mayor in the next election: very likely, somewhat likely, unlikely, not at all likely?"

Winters and Weitz-Shapiro(2013) and Boas et al (2018) found negative effects of corruption information in survey experiments in Brasil. Boas et al (2018) found no effects of providing corruption information on voting in a field experiment.

Question: What is the role of survey experiments in a research program? How can survey experiments contribute? When should you choose a survey experiment over a field experiment or a lab experiment? When should you choose a field experiment? When should you choose a lab experiment?

References

References

Mutz, Diana C. 2011. *Population-Based Survey Experiments*.
Princeton University Press.