Conjoint Experimental Design in Social Science

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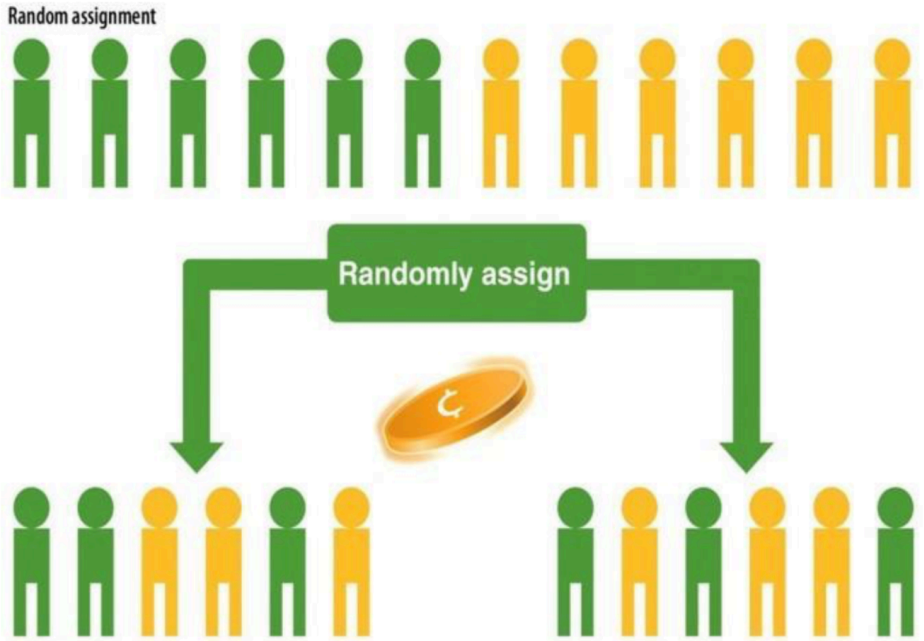
Why experiment?



- Reason 1: causality
- Reason 2: causality
- Reason 3: causality

What are the disadvantages of survey experiment?

- Lack of reality (gap between attitude and behavior)
- Hawthorne effect (researchers are demanding)
- Social desirability bias (untruthful answers)
- Cheap answers (decision-making in a too short time)

Conjoint experiment is for solving these problems!

What is conjoint experiment?

Example:
Liu, Yixin, Heewon Lee, and Frances Berry. How and When Democratic Values Matter: Challenging the Performance Centric Framework in Program Evaluation

Now, assume that a solar project will take place in your school district. You will get information of **two possible projects** for comparison in each page. Please **indicate which project you prefer** over the other.

In total, you are asked to make **4 comparisons**.

Note: There is **no** right or wrong answer to any comparisons.

Please indicate Which project you prefer:

This project:	Project A	Project B
reduce annual CO2 emission (metric tones)	320 tons	715 tons
save schools' annual expense	$720K	$359K
implementation information is available to	The public	Government internal review
decision-making involves	Government agencies	Diverse local communities

Project A

○

Project B

○

Please indicate Which project you prefer:

This project:	Project A	Project B
reduce annual CO2 emission (metric tones)	715 tons	715 tons
save schools' annual expense	$359K	$359K
implementation information is available to	The public	Government internal review
decision-making involves	Government agencies	Diverse local communities

Project A

Project B

Attributes (variables in analysis)

Components (values in a variable)

Please indicate Which project you prefer:

This project:	Project A	Project B
reduce annual CO2 emission (metric tones)	715 tons	715 tons
save schools' annual expense	$720K	$720K
implementation information is available to	The public	Government internal review
decision-making involves	Diverse local communities	Diverse local communities

Project A ○

Project B ○

Table 2: **Attributes for project profile in conjoint experiment**

Attributes	Components
Democratic values	
Inclusiveness	(1) Government agencies
(Decision-making involves)	(2) Diverse local communities
Openness	(1) Government internal review
(Implementation information is available to)	(2) The public
Performance information	
Environmental indicator	(1) 715 tons
(Reduce annual CO2 emission)	(2) 320 tons
Economic indicator	(1) $720k
(Save schools' annual expenses)	(2) $359k

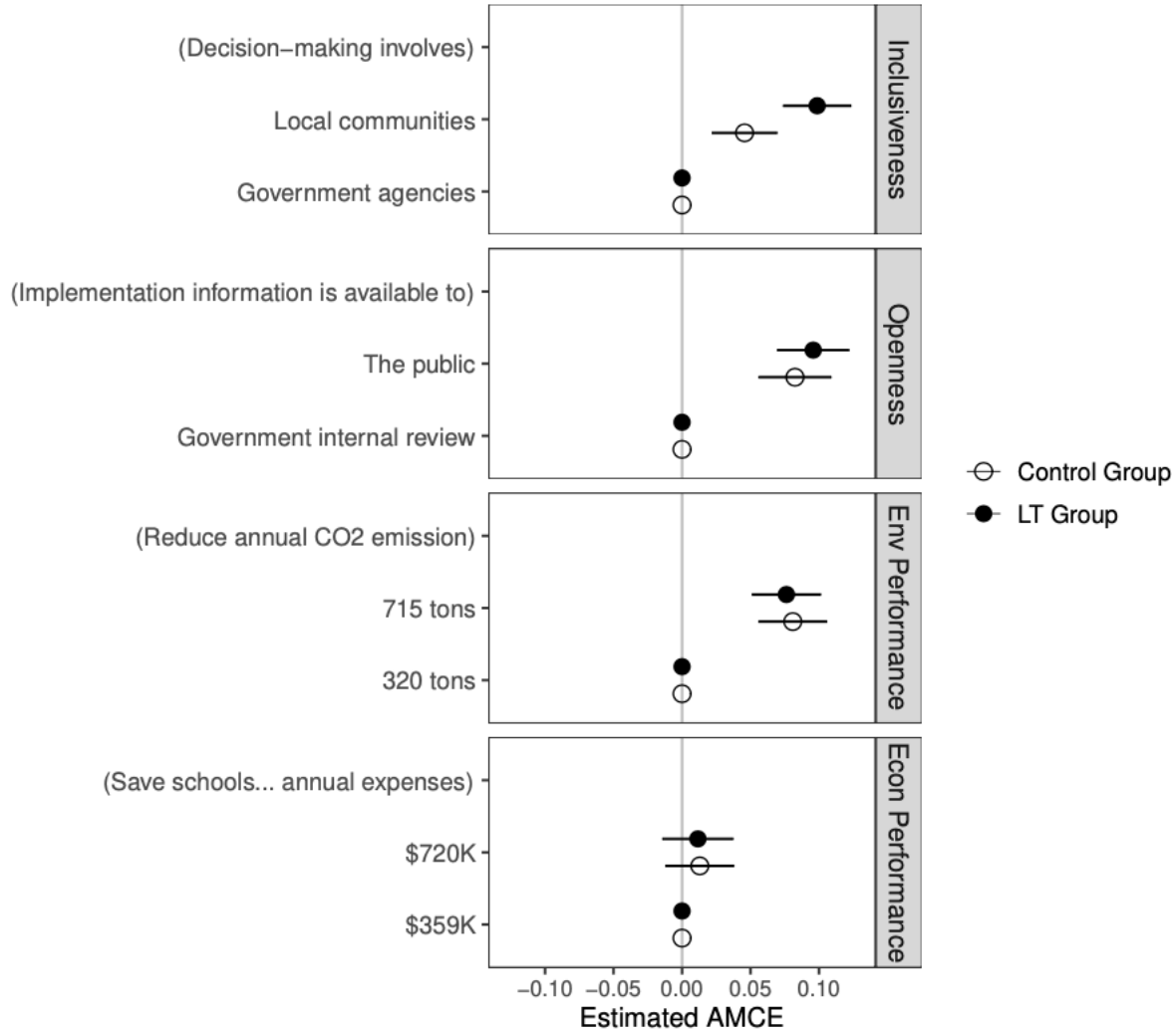


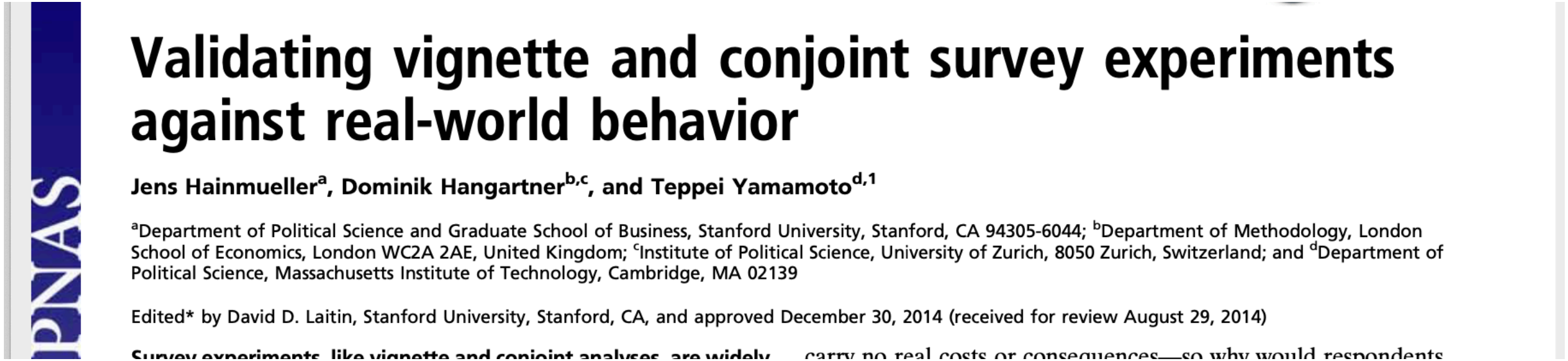
Figure 3: **Public support change for project adoption**

Note: Bars are 95% confidence intervals.

What are benefits of using conjoint experiment?

- ~~Lack of reality (gap between attitude and behavior)~~ Force choice
- ~~Hawthorne effect (researchers are demanding)~~ Treatment is confounded
- ~~Social desirability bias (untruthful answers)~~ For every subject, researchers hard to tell where his/her decision come from, which provide a veil to protect truthful answers
- ~~Cheap answers (decision-making in a too short time)~~ Subjects spend longer time in reading conjoint information than traditional survey questions.

Does conjoint experiment close to reality?



PNAS

Validating vignette and conjoint survey experiments against real-world behavior

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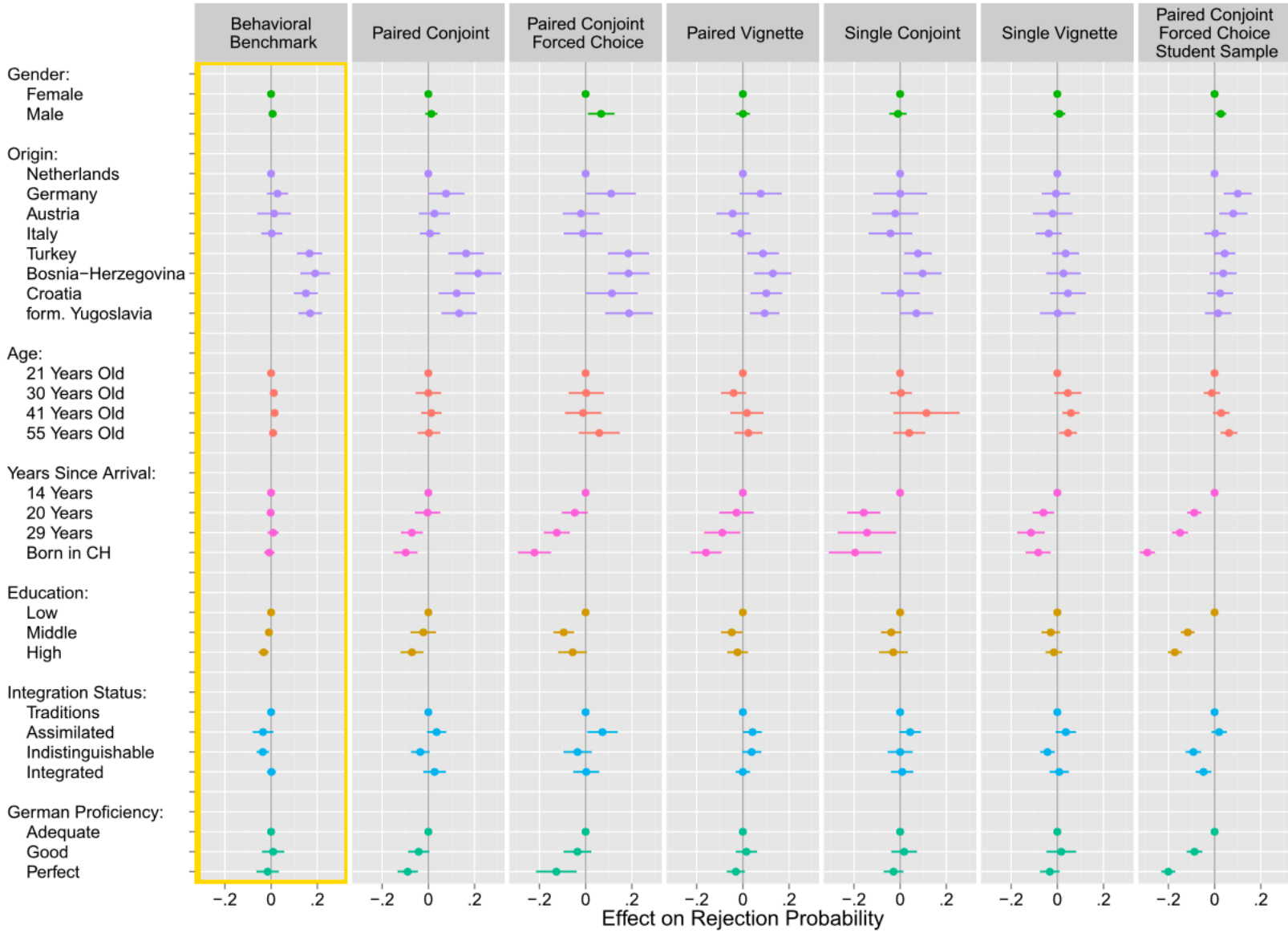
Survey experiments, like vignette and conjoint analyses, are widely ... carry no real costs or consequences—so why would respondents

Hainmueller, J., Hangartner, D., & Yamamoto, T. (2015). Validating vignette and conjoint survey experiments against real-world behavior. *Proceedings of the National Academy of Sciences*, *112*(8), 2395-2400.


Behavioral Benchmark
Paired Conjoint
Paired Conjoint Forced Choice
Paired Vignette
Single Conjoint
Single Vignette
Paired Conjoint Forced Choice Student Sample
Gender:
Female
Male
Origin:
Netherlands
Germany
Austria
Italy
Turkey
Bosnia−Herzegovina
Croatia
form. Yugoslavia
Age:
21 Years Old
30 Years Old
41 Years Old
55 Years Old
Years Since Arrival:
14 Years
20 Years
29 Years
Born in CH
Education:
Low
Middle
High
Integration Status:
Traditions
Assimilated
Indistinguishable
Integrated
German Proficiency:
Adequate
Good
Perfect
−.2
0
.2
Effect on Rejection Probability

Theoretical Implication

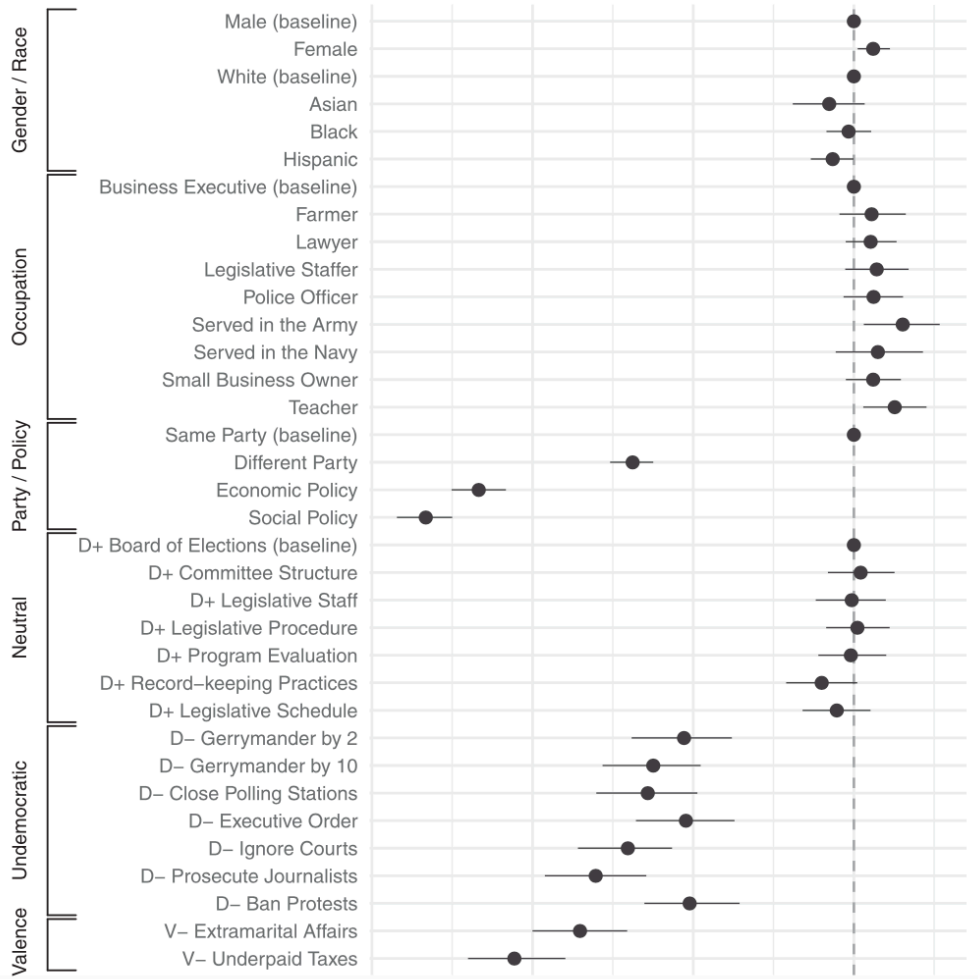
- Testing competing theories (e.g. democratic values vs performance information)
- Comparing effects of multiple theories (e.g. immigrants' characteristics: income, race, education, religion…)
- Testing sensitive questions that are hard to know truthful answers from direct questioning: discrimination, candidate preference, debatable policy…

Topics in Public Administration and Political Science

Graham, M. H., & Svolik, M. W. (2020). Democracy in America? Partisanship, Polarization, and the Robustness of Support for Democracy in the United States. *American Political Science Review*, *114*(2), 392-409.

Topic 1:
candidate voting

FIGURE 7. Effects of Candidate Attributes and Democracy Positions on a Candidate's Vote Share. Dots Represent Coefficient Estimates Based on a Linear Regression Model; Bars Represent 95% Confidence Intervals

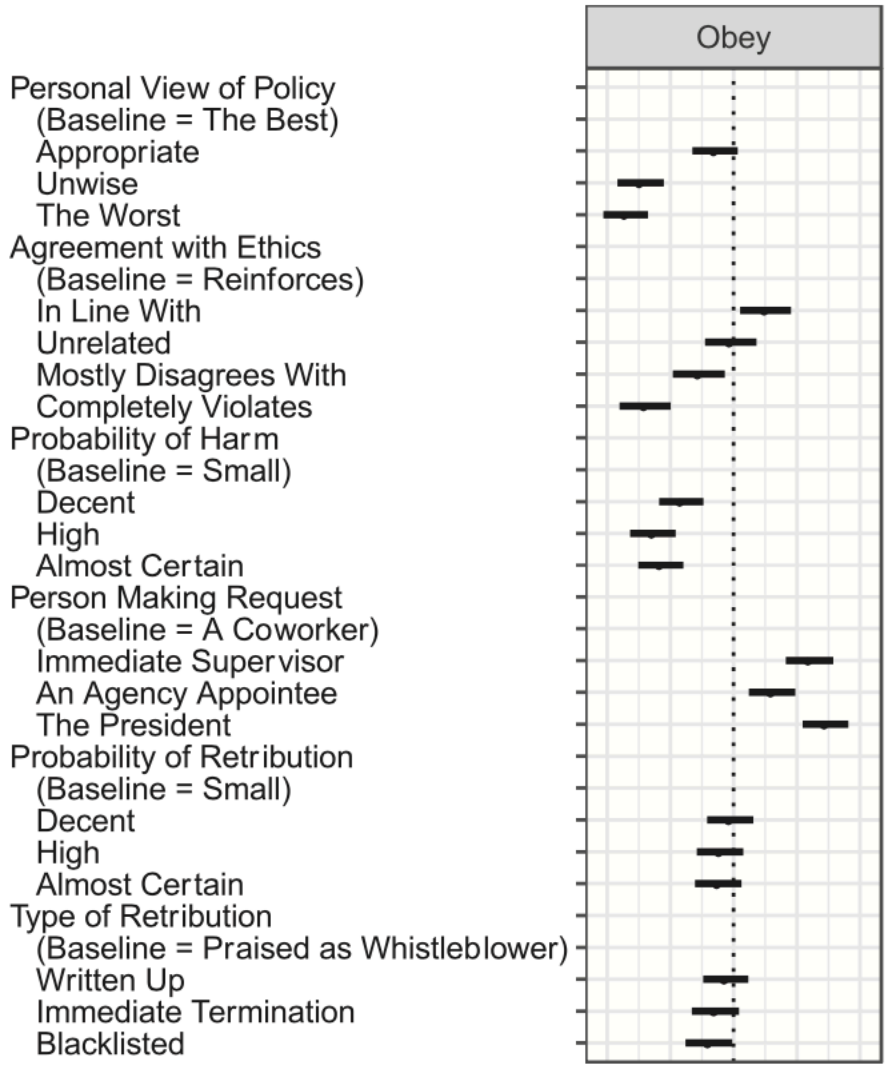


Hollibaugh Jr, G. E., Miles, M. R., & Newswander, C. B. (2020). Why Public Employees Rebel: Guerrilla Government in the Public Sector. *Public Administration Review*, *80*(1), 64-74.

Topic 2: organizational management

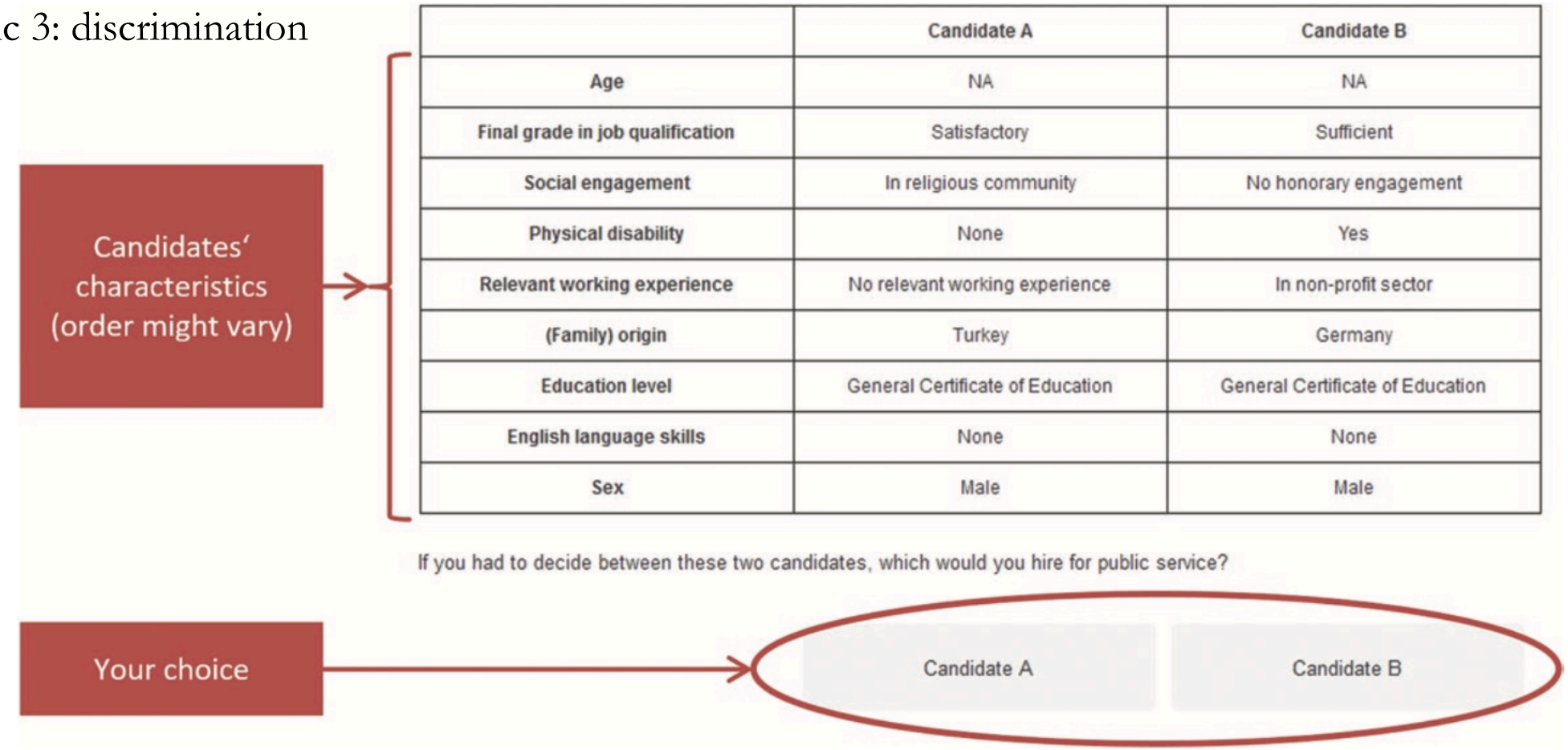
Brief Summary of the two scenarios:

	Scenario 1	*Scenario 2*
Requested by:	**the President of the United States**	**your immediate supervisor**
Ethics:	**mostly disagrees with**	**is unrelated to**
Your Personal View:	**an unwise**	**an appropriate**
Probability of Harm:	**high**	**almost certain**
Probability of Retribution:	**decent**	**decent**
Type of Retribution:	**written up**	**written up**



Jankowski, M., Prokop, C., & Tepe, M. (2020). Representative bureaucracy and public hiring preferences: Evidence from a conjoint experiment among German municipal civil servants and private sector employees. *Journal of Public Administration Research and Theory*.

Topic 3: discrimination



	Candidate A	Candidate B
Age	NA	NA
Final grade in job qualification	Satisfactory	Sufficient
Social engagement	In religious community	No honorary engagement
Physical disability	None	Yes
Relevant working experience	No relevant working experience	In non-profit sector
(Family) origin	Turkey	Germany
Education level	General Certificate of Education	General Certificate of Education
English language skills	None	None
Sex	Male	Male

Figure A1. Conjoint Experimental Instructions, Example of the Decision Screen

Useful resources

Articles:

- Hainmueller, J., Hopkins, D. J., & Yamamoto, T. (2014). Causal inference in conjoint analysis: Understanding multidimensional choices via stated preference experiments. *Political analysis*, 22(1), 1-30.
- Leeper, T. J., Hobolt, S. B., & Tilley, J. (2020). Measuring subgroup preferences in conjoint experiments. *Political Analysis*, *28*(2), 207-221.
- Bansak, K., Hainmueller, J., Hopkins, D. J., & Yamamoto, T. (2019). "Conjoint Survey Experiments" For Druckman, James N., and Donald P. Green, eds. Cambridge Handbook of Advances in Experimental Political Science, New York: Cambridge University Press.
- Strezhnev, A., Hainmueller, J., Hopkins, D. J., & Yamamoto, T. (2013). Conjoint Survey Design Tool: Software Manual. *Cited on*, 69.

Software:

R: cjoint, cregg

Python: conjointSDT.py