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Cooperation, framing and political attitudes*

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Toke R. Fosgaard, Lars G. Hansen and Erik Wengström[†]

This paper shows that political attitudes are linked to cooperative behavior in an incentivized experiment with a large sample randomly drawn from the Danish population. However, this relationship depends on the way the experiment is framed. In the standard game in which subjects *give* to a public good, contributions are the same regardless of political attitudes. In an economically equivalent version, in which subjects *take* from a public good, left-wingers cooperate significantly more than subjects in the middle or to the right of the political spectrum. Through simulation techniques we find that this difference in the framing effect across political point of views is to some extent explained by differences in beliefs and basic cooperation preferences.

Keywords: Cooperation, Social Dilemma, Political Ideology, Experiment, Simulation

JEL-codes: H41, C90, D03

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I. Introduction

One of the great divisions between the political right and left is the view on how big a role government should have in society. Individuals at different ends of the political spectrum may agree on the need for cooperation and provision of public goods, but disagree on the means to achieve these ends. While the left typically advocates governmental involvement, the right often prefers private solutions and charitable institutions. These different stances could come about for a variety of reasons. The case for government involvement may be driven by a preference for cooperation and a larger degree of public goods provision, but it could also be a manifestation of disbelief in people's ability to voluntarily cooperate. Analogously, the right's reluctance towards governmentally provided social policy could be rooted in preferences for less public good provision, but could also be the result of a belief in people's willingness to cooperate in a decentralized manner.

Surprisingly little is known about how people's political attitudes are linked to cooperative behavior and beliefs at the individual level. To shed light on this issue, we run a public good experiment using a large heterogeneous sample. We manipulate the framing of the public good; the actions of subjects are either framed as giving to a public pool or as taking from or a common pool. In the standard give version of the public good game, we observe no difference in cooperation levels between the right wingers and left wingers. But we find that effects of re-framing the game as taking from a common pool is heterogeneous and vary with political attitudes. While right-wingers slightly decrease contributions in the take-frame, left-wingers significantly increase their contributions. We also find that this difference in the reaction to re-framing the game is to some extent explained by framing differences in beliefs and basic cooperation preferences (elicited in a strategy version of the public good game).

Yet, there is also a substantial unexplained effect indicating that left wingers simply have a greater inclination to contribute in this institutional setting, conditional on cooperation preferences and beliefs, than right wingers do. Thus the answer to a question like ‘are left-wingers more generous and right wingers more greedy?’ depends critically on the institutional setting in which the question is asked.

Our paper contributes to a thin but growing literature that relates behavior in controlled experiments to political attitudes.¹ (Anderson et al., 2005) find that ideology is unrelated to public good contributions, but liberals display slightly more trust and trustworthiness. It should be noted that the paper uses a small sample of 48 students in the public good game so it is not clear how robust this finding is and how it generalizes to non-student samples. Previous literature has found that sharing behavior in the dictator game is strongly related to political preferences. In a sample of Norwegian students Cappelen et al., (2016) report that people voting for left-wing parties give about 10 percent more. Dawes et al., (2012) find similar results. In contrast, Thomsson and Vostroknutov (2016) find no difference in dictator game giving between the left and the right. But they show that the reasons for giving are different: while right-leaning individuals share in accordance with what they believe constitutes a social norm in the dictator game, left-leaning individuals follow more abstract reasoning about redistribution.

There is also some evidence from the field. Bolsen et al. (2014) find that people who are frequent voters are more likely to respond to pro-social messages urging for water conservation. However, the effect of messages did not differ between Republican and Democrat households. In contrast, Costa and Kahn (2013) found

¹ There is also a stream of literature using survey-based methods. See for example Brooks (2006), who shows that right-wingers contribute more to charities than left wingers.

heterogeneous responses to electricity-conservation nudges, with effects being two to four times larger with political liberals than with conservatives.

Our paper also contributes to the voluminous literature on framing effects in social dilemma experiments.² We do not intend to make a cohesive account of this literature, but note that most previous studies have strived to find general explanations that are uniformly applicable across the population. In contrast, we investigate heterogeneity in framing effects. To the best of our knowledge, no previous study has addressed this issue.

The paper is organized as follows. Section 2 describes the experimental design, and section 3 presents our results. Section 4 concludes the paper.

II. Experimental design:

General outline of the experiment

The experiment was conducted online through the iLEE platform (internet Laboratory for Experimental Economics) at the Department of Economics, the University of Copenhagen in spring 2008.³ Other aspects of the public good experiment have previously been studied in Fosgaard et al. (2016, 2014) and the description of the experimental design follows these papers closely.

The Danish National Bureau of Statistics (Statistics Denmark) sent out hard-copy invitation letters to a sample of 18,027 randomly selected individuals between 18 and 80 years of age residing in Denmark. The invitation letter contained a personal log in code and the internet address of the experiment. The subjects were informed that they had a week to respond to the invitation. During

² See e.g. (Andreoni, 1995; Cubitt et al., 2011a, 2011b; Dufwenberg et al., 2011; Frey and Meier, 2004; Grant, 2013; Grossman and Eckel, 2012; Korenok et al., 2013; List, 2007; Messer et al., 2007). We have previously (Fosgaard et al., 2016, 2014) used the same data as in the present paper to investigate framing effects. But we have previously not investigated heterogeneity in framing effects, which is the focus of the present paper.

³ See http://www.econ.ku.dk/cee/iLEE/iLEE_home.htm for a detailed description of the iLEE platform. The platform has been used for studies on a broad range of topics, see for example Thöni et al. (2012) and Andersson et al. (2016).

this week, subjects could log in and out as they wished. After this week, we matched the participants who had completed the experiment into groups, and these participants could log in again to receive feedback on the experimental results and type in their bank account number, to which their earnings during the experiment were transferred.

When logging on to the iLEE website for the first time, subjects were given general information about the scientific purpose of the experiment and told that they could earn money. After this introduction, subjects were asked to type in their sex, age, and highest completed education level. Subsequently, subjects met more specific instructions for the public good (PG) games and filled in standard control questions that asked them to calculate their earnings for different contribution scenarios. Having passed the control questions, the subjects played two versions of the PG game (details below). Immediately after the PG games, subjects carried out a misperception test. Finally, the experiment contained a series of personality and cognitive ability tests and background questions. On the screens with the instructions, control questions and the public good experiments, subjects had access to a profit calculator. Subjects could type in the contributions of the four group members and calculate the corresponding payoffs.

For the analysis in our paper, we use 1,926 subjects who answered all pre-experiment control questions correctly and who completed the entire experiment. More information about the sample and how representative it is of the Danish population is found in the Online Appendix.

The Public Good Games

Subjects played two separate one-shot public good games, with re-matching and no feedback between the two. The group size in both games was four. In the first game, the standard game, each subject was given control of 50 DDK (≈ 6.7 €)

which they could freely allocate, either by contributing it to the PG, or keeping for themselves.

Subjects were randomly allocated either to the *give*, or to the *take* frame. The applied framing follows the design of (Andreoni, 1995). In the *give* frame, subjects were initially given the 50 DKK as a private endowment, and they were then asked what part of the endowment they wanted to contribute to the common pool. In the *take* frame, the 50 DKK was initially allocated to the common pool and subjects were then asked how much of the 50 DKK they wanted to withdraw from the common pool. Under both frames, the money allocated to the PG was doubled and shared equally among all group members. Hence, the earnings of a subject consisted of the amount not contributed to the public good plus an amount equal to half of the total public good contributions.

After completing the standard game, subjects were informed that they had been matched into new groups and that they were to participate in another PG game. This time, they played a strategy version of the public good game (the strategy game). We used a modified version of the design developed by Fischbacher et al., (2001) in which a profile of PG contributions, conditional on different levels of average contributions of other group members, is elicited from each subject. The subjects were divided into new groups of four and asked to make two types of PG decisions. First, the unconditional contribution was elicited in exactly the same way as the contribution in the previous standard game. Second, subjects were asked to indicate their contribution conditional on the values of the other three group members' average contribution, varying from 0 to 50 DKK in steps of 5 DKK. Thus, each subject was asked how much they wanted to contribute if the other group members on average contributed 0 DKK, if they on average contributed 5 DKK, and so on up to 50 DKK. Prior to making these choices, subjects were informed that there was a 25% chance that their payoff would be calculated based on their conditional contribution and a 75% chance that it would

be calculated based on their unconditional contribution profile. When calculating payoffs, we used the unconditional contributions for three randomly selected group members, while the fourth subject's contribution was calculated based on the conditional contribution profile based on the average of the unconditional contributions from the other three group members.

Since contribution profiles are conditional on the contributions of the other group members', they are unaffected by beliefs about the other group members' contributions. Fischbacher et al. (2001) show that the strategy method provides incentives to disclose the conditional contribution profile associated with the unconditional contribution elicited in the standard PG game.

Other measures

Right after the strategy game, subjects were asked incentivized control questions to test for misperception. Previous studies show that misperception or confusion can explain some of the cooperative behavior in public goods games (Bayer et al., 2013; Burton-Chellew et al., 2016; Houser and Kurzban, 2002) and may be linked to framing effects (Ferraro and Vossler, 2010; Fosgaard et al., 2016). In our misperception test, we used the contribution profile setup introduced in the strategy game to ask participants to delineate the contribution profiles of imaginary subjects who either only care about their own payoff, or only care about the payoffs of others. The test consisted of six questions. It was emphasized that each question only had one correct answer and that the subjects would earn 5 DDK (≈ 0.7 €) for each correct answer. The first three questions asked the subject what public good contribution a person, who only cares about own payoff, would choose if the other subjects, on average, contribute 0 DKK (question 1), 25 DKK (question 2) and 50 DKK (question 3). The last three questions asked what contribution a person who only cares about the payoff to other group members would choose, when the others on average contribute 0 DKK (question 4), 25

DKK (question 5) and 50 DKK (question 6). We interpret incorrect answers to these questions as an indication that the subject has misperceptions about how to implement the specified goals.

After the experiment, we included several well-established cognitive ability and personality tests. Subjects' ability to think logically was measured using a 20-item progressive matrices test (referred to as the Cognitive ability test). The 3-item Cognitive Reflection test, proposed by Frederick (2005), (referred to as the CR test) was used to measure whether subjects resist giving fast intuitive answers, and instead carefully deriving the correct answer. Finally, we applied the Danish version of the Big 5 personality test. The test consists of 60 statements covering personality traits in five dimensions: agreeableness, conscientiousness, extraversion, neuroticism, and openness. These tests were identical for both treatments. A more detailed description of the measures, as well as the screenshots, is available in the Online Appendix.

Political attitudes

Our measure of political attitudes is based on the following question taken from the World Values Survey: "In political matters, people talk of "the left" and "the right." How would you place your views on this scale, generally speaking?" Answers were given on a 10-point scale between 1 (Left) and 10 (Right). We divide subjects into two groups according to their answer to the political attitude question; subjects 1-5 are denoted *left* (997 subjects) and 6-10 are denoted *right* (929 subjects). Of course, political attitudes contain many dimensions, but the left-right scale remains a useful classification that has been shown to correlate with behavior and attitudes in an extensive set of contexts (see for example Jost, 2006).

We cannot rule out the existence of spillovers from the game to the political attitudes question. But such potential effects are mitigated by the fact that subjects

participated in a risk elicitation task and answered several other background questions in between the public goods game and the political attitudes question. Moreover, there is no indication that the political attitudes are related to the framing of the public good game, as the political attitudes distributions are nearly identical across treatments.

III. Results

We demonstrate our main results in three steps. *First*, we present descriptive statistics and nonparametric tests of contribution differences across treatments and political groups. *Second*, we investigate correlates of cooperation behavior using regression analysis. *Third*, we use the simulation methods introduced in Fosgaard et al. (2014) to break down the overall framing effect into parts attributed to changes in beliefs, misperceptions, and preferences.

Step 1. Figure 1 displays the average contributions by treatment across political attitudes. The left panel presents the data from the Give treatment, in which subjects on the political left give slightly more than the ones on the right. However, using the Mann-Whitney test, this difference in contributions between political groups is not significant (p -value = 0.472). The difference between political attitudes is much stronger in the right panel which displays contributions in the Take treatment. Here, there is a substantial difference between groups with the left wingers giving 11 percent more than the right wingers. This difference is highly significant using the Mann-Whitney test (p -value = 0.003).

We also find that there is no framing effect on average contributions of the right-wing group (Mann-Whitney p -value = 0.980), while there is a highly significant framing effect among the left-wingers (Mann-Whitney p -value < 0.001).

Step 2. Table 1 presents regression estimates from a series of OLS regressions with public good contributions as the dependent variable. In Model 1, contributions are regressed on a treatment dummy, basic socioeconomic controls and a dummy variable for belonging to the right of the political spectrum. Note that we restrict model 1 not to have different framing effects between right and left wingers. When we do not allow for heterogeneity, the framing effect is of limited size and insignificant and it seems that left-wingers do contribute significantly more than right-wingers. In Model 2, we have allowed the framing effect to be heterogeneous by interacting the political attitudes variables with the treatment variable. When we do this the magnitude of the left-wing dummy drops, and becomes insignificant. Further in line with the average contributions visualized in Figure 1, the interaction of take frame and left wing is positive and significant indicating that the left-wingers are affected by framing. There is no general framing effect indicating that right-wingers are not affected by the framing. When we also control for cognitive ability and cognitive reflection and big five personality scores (in Model 3), the framing parameters are left unaffected but the left-wing dummy is reduced further indicating that there is no noticeable association between political attitudes and cooperation in the give frame.

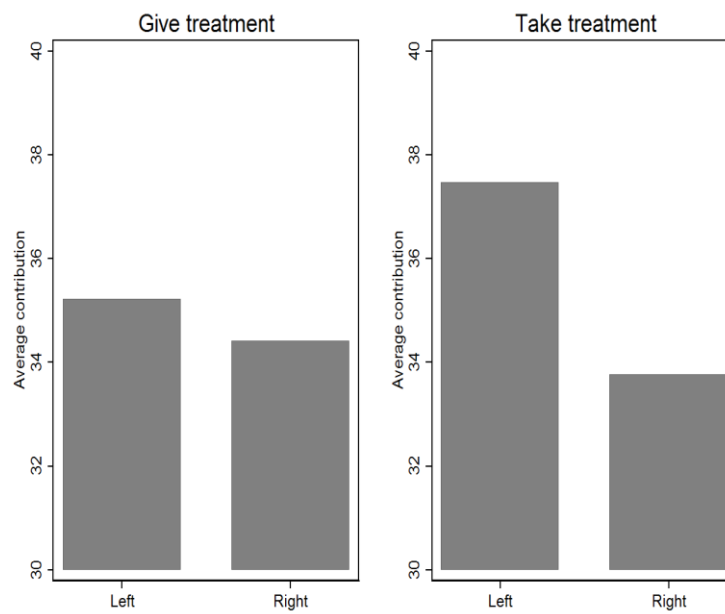


Figure 1. Mean contributions by treatment and political attitudes

Table 2. Ordinary least square regression. Dependent variable: Public good contributions

| Variables: | (1) | (2) | (3) |
|-------------------|-----------|-----------|-----------|
| Take Frame | 0.813 | -0.885 | -0.872 |
| Left wing | 2.073*** | 0.976 | 0.256 |
| Take * Left wing | | 3.295** | 3.024** |
| 18 ≤ Age ≤ 29 | -5.295*** | -5.377*** | -4.926*** |
| 30 ≤ Age ≤ 39 | -1.059 | -1.154 | -0.784 |
| 50 ≤ Age ≤ 59 | -2.439** | -2.451** | -2.498** |
| 60 ≤ Age ≤ 80 | -2.817** | -2.852*** | -2.920** |
| Basic Education | -3.147** | -3.257** | -3.021** |
| Short Uni Edu | -0.414 | -0.540 | -0.898 |
| Long Uni Edu | 1.112 | 1.144 | 0.594 |
| Female | -1.029 | -1.007 | -1.338* |
| CRT Score | | | 0.292 |
| Cognitive Ability | | | -0.0833 |
| Agreeableness | | | 0.290*** |
| Conscientiousness | | | -0.132* |
| Extroversion | | | 0.124* |
| Neuroticism | | | -0.0842 |
| Openness | | | 0.127** |
| Constant | 36.73*** | 37.39*** | 27.75*** |
| Observations | 1,926 | 1,926 | 1,926 |
| R-squared | 0.023 | 0.026 | 0.043 |

Notes: Take Frame is a dummy variable for subject in take frame. Left wing indicate if a subject gave answer 1-6 on the political attitudes question (approximately 50% of the sample). Take*Left wing is an interaction variable of Take and Left wing. The Basic Education category contains those with primary education only, Short Tertiary Education those with tertiary education up to 4 years and Long Tertiary Education those with a tertiary education of at least 4 years. CR-score is the score on the cognitive reflection test (0-3) and Cognitive Ability is the number of correct answers (0-20) to the IQ test. The Big 5 variables (Agreeableness, Conscientiousness, Extroversion, Neuroticism, Openness) each give a score between 0 and 48 for each of the give personality dimensions. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Step 3. *Decomposing framing effects.* The shift in contributions between frames for the left wingers could have several causes. In Fosgaard et al. (2014) we assumed an extended version of the causal model explaining contributions suggested by (Fischbacher and Gächter, 2010) and developed a methodology for distinguishing between different potential explanations of framing effects suggested by this model. We now apply the same strategy here to decompose the framing effect for each of the political groups separately. In the experiment, we elicit beliefs and test for game-form understanding using the misperception questions. In addition, we elicit subjects' conditional cooperation preferences using the Strategy game. Together, we can use these measures to simulate the framing effect on mean contribution and to decompose the total framing effect into parts explained by framing effects on:

1. Beliefs about others contributions
2. Contribution preferences
3. Misperception about the game structure
4. Unexplained framing effect

Specifically, we estimate a model explaining contribution based on the belief, preferences, and misperception measures. We begin by running separate regressions in which we use contribution, cooperation preferences, beliefs and misperceptions as dependent variables. Each of these regressions, include frame as one of the explanatory variables. Within this framework we can begin to analyze the effects of changing the frame. Specifically, we focus on all observations measured under the give frame, and simulate what would happen, in terms of cooperation, when the observations from the give frame are assigned to the take frame. We impose this transition from give to frame for each component (cooperation preference, beliefs and misperception) at a time and measure the

resulting effect on cooperation. Introducing the influence from the take frame in this stepwise fashion allow us to decompose the framing effect working through beliefs, cooperation preferences, misperception and a remaining unexplained effect. For the purpose of the present paper, the entire exercise is repeated for the left winger and the right winger respectively. More details about the simulation strategy are found in Fosgaard et al. (2014).

The results from the simulation exercises are presented in Figure 2. The main findings across political groups are in line with the aggregated results presented in Fosgaard et al. (2014). Beliefs are more pessimistic in the take frame causing lower contributions but this negative effect is counterbalanced by a positive direct (unexplained) effect. What mainly distinguishes the left- and right-wingers is that the magnitudes of these effects are different. The negative belief effect is notably smaller among the left-wingers while the positive unexplained effect is larger. So while the effects cancel out for the right wingers, the overall framing is positive and significant for the left wingers. There are also a small, but significant, framing effect through changes in preferences. Left-wingers have contribution preferences that imply higher contributions in the take, whereas right-wingers display the opposite effect.

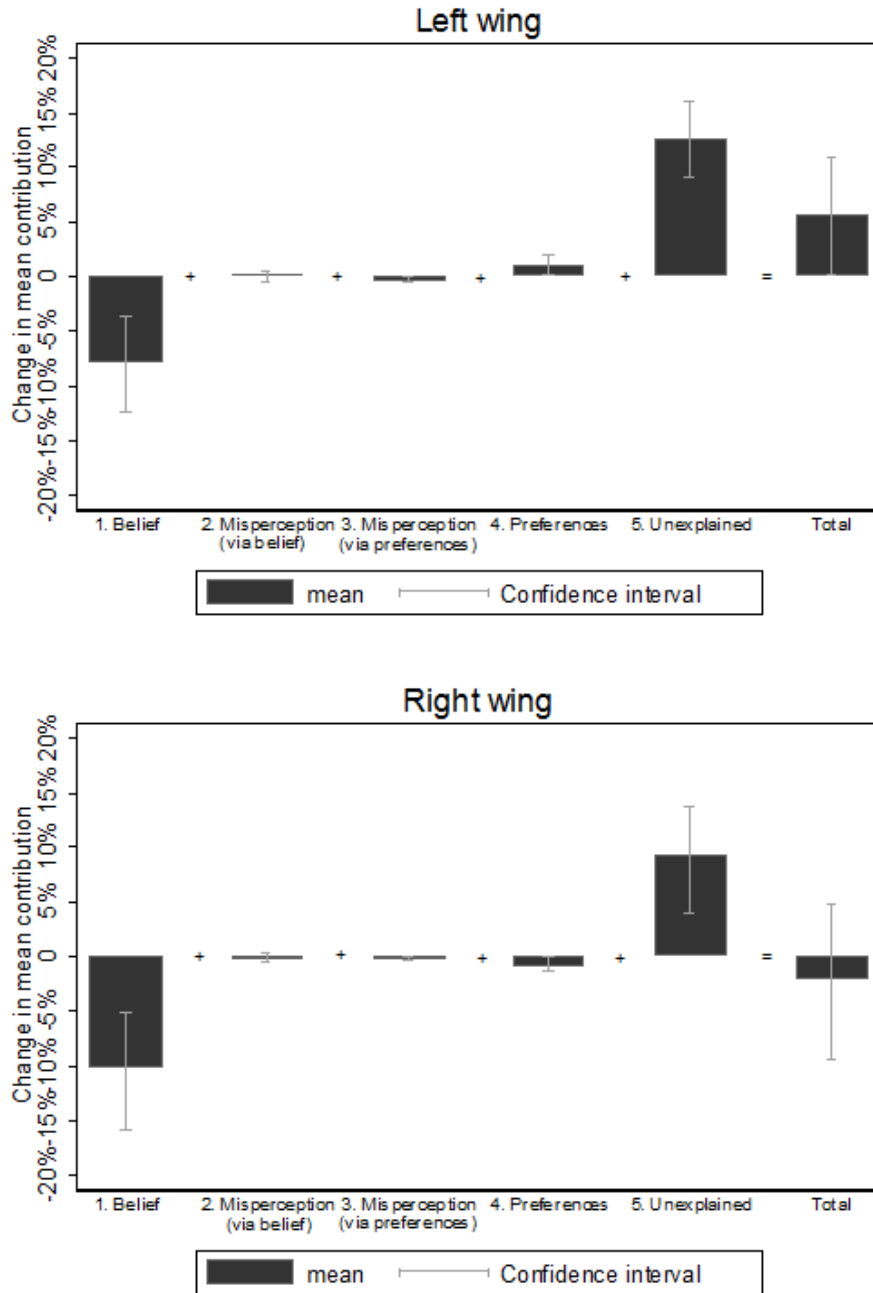


Figure 2: Simulated effects (and 95% confidence intervals) on mean contribution when moving subjects from the give frame to the take frame. Top panel displays left wingers and bottom panel display right wingers.

IV. Concluding discussion

In this paper we have shown framing effects in public goods games are heterogeneous. Individuals to the right of the political spectrum contribute similar amounts to the public good independent of how the game is framed. In contrast, individuals with left-leaning political preferences contribute more if the game is framed as taking from a common pool instead of giving to the common pool.

Our data makes it possible to decompose this difference causally and we find that framing effects on basic cooperation preferences and beliefs are part of the explanation. However a large part of the framing effect is unexplained and so we cannot draw ultimate conclusions about what the main mechanisms behind our result is. One potential explanation is that our results reflect different attitudes to centralized responsibility of coordination and cooperation on social issues. The political left is typically in favor of central authorities, such as governments, taking responsibility for social issues, while the right is typically favoring solutions based on individual actions. It could be that the take frame resembles a centralized solution, which leads left wingers to contribute more.

Another possible explanation may be found in the Moral Foundation Theory (Haidt and Graham, 2007; Haidt and Joseph, 2004) which posits that moral values derive from a set of innate psychological mechanisms that has evolved in interplay with cultural and institutional contexts. Graham et al. (2009) report that the foundations of moral judgements vary across the political spectrum; i.e. the types of considerations relevant to moral judgment are not the same for right-wingers (conservatives) and left-wingers (liberals). Right-wingers are more likely to find issues relating to ingroup/loyalty, authority/respect, and purity/sanctity to be relevant for moral judgments, whereas left-wingers put most emphasis on factors connecting to harm/care and fairness/reciprocity. In relation to our experiment, one could argue that taking from the public good relates to the

harm/care dimension. And since these issues are deemed more relevant among the left-wingers, they may be less inclined to take from the public good. It may also be that giving to a public good resembles a voluntary private institutional solution which appeals to right-wingers in-group loyalty while the take framing looks more like a government organized solution that appeals to left-wingers fairness/reciprocity. This would be consistent with differences in cooperation preferences and the unexplained effect we see in the take framing.

Irrespective of which is the mechanism, our finding indicates that framing effects are sensitive to the choice of subject pool. This could perhaps help reconciling some seemingly disparate findings in the literature. For example, in our sample, we observe more overall cooperation in the take frame, while the majority of studies find the opposite with more cooperation in the give frame. One potential explanation of our diverging finding is that our subjects have more left-leaning political preferences and thus contribute more in the take frame.

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