

The Impact of Group Identity on Coalition Formation

Abstract

Bargaining and coalition building are a central part of modern politics. We argue that majoritarian bargaining is important for the formation of political coalitions and that group-identity preferences impact partner selection. We test the effect of gender, race and ideological distance in a majority-rule bargaining experiment and find that ideological distance significantly affects offers made to potential partners. We conclude that preferences for similar coalition partners can help predict which coalitions form, even in the absence of policy concerns.

Keywords— Coalition Formation, Laboratory Experiments, Baron and Ferejohn Model, Legislative Bargaining, Social Identity

Coalitions are an integral part of modern politics. They play a fundamental role in government formation and legislation. Coalition theories have a long history in political science (von Neumann and Morgenstern, 1953; Riker, 1962; Baron and Ferejohn, 1989; Axelrod, 1970; de Swann, 1973; Baron and Diermeier, 2001, among many others). Yet, experimental research addressing the social dynamics involved in coalition building is still relatively scarce.

In this study, we use a laboratory experiment, a standard divide-the-dollar majority bargaining game where policy is purely distributive (Baron and Ferejohn, 1989), to test the impact of social identity on the fundamental structures of coalition formation.¹ Our findings show that gender and race did not affect participants' decisions. By contrast, ideology had a strong effect. Participants offer less and are less likely to offer any positive amount, to those who are more distant from them ideologically. Substantively, the results provide evidence that a preference for similar group members can help predict which partnerships will form, even when there are no policy benefits to be gained.

We argue that membership in predefined groups may help predict coalition formation. In some countries, political coalitions and parties are formed on the basis of ethnicity, such as the indigenous parties in Bolivia or the Chewas and Tumbukas in Malawi (cf. Horowitz, 1993; Posner, 2004; Madrid, 2008). In other countries, parties are based on shared ideological positions, but even there, social identity considerations may affect coalition formation. Partisanship has a social identity component, with party members expressing in- and out-group biases regarding actions and opinions of members of the opposition (Campbell et al., 1960; Bartels, 2002; Huddy and Bankert, 2017; Westwood et al., 2018, among others). For example, Aneurin Bevan, a British Labour party politician, stated: "No amount of cajolery, and no attempts at ethical or social seduction, can eradicate from my heart a deep burning hatred for the Tory Party. So far as I am concerned they are lower than vermin."

Empirically, coalitions in parliamentary democracies are less likely to form as the ideological distance between potential partners increases (Martin and Stevenson, 2001). Similarly, pre-election coalitions are more likely to form, and are more acceptable to voters, if they in-

¹With the exception of Tremewan (2010), who uses exogenous stimuli to induce group identity, there is no other research known to us addressing the impact of group identity on coalition-building.

clude ideologically congruent parties (Golder, 2006; Gschwend and Hooghe, 2008). As a consequence, ‘oversized’ coalitions – coalitions that are not a minimum winning coalition and sometimes not even a minimal winning coalition – are frequently observed in actual politics. Social identity could also limit the possibility of forming a coalition altogether. For example, in Spain four elections have taken place since 2015 in which no party was able to gain a majority of seats and parties since then failed to form a formal coalition – one reason besides policy disagreements being deep ideological divisions over Spain’s authoritarian past and Catalonia’s demands for independence.

Thus far, theoretical models have successfully incorporated policy and office seeking preferences into coalition formation. However, these ‘policy-seeking’ models make strong assumptions about credibility of offers and trade-offs between office and policy benefits in coalition negotiations (cf. McKelvey and Schofield, 1986; Laver and Schofield, 1990; Laver and Budge, 1992; Laver, 1997; Bandyopadhyay and Chatterjee, 2006). Even so, their results tend to predict coalitions will form between the largest party and the one with the smallest bargaining power, which may or may not produce ideologically coherent alliances (Austen-Smith and Banks, 1988; Baron and Diermeier, 2001). Incorporating group identity preferences might help improve model predictions and bring them closer to the patterns observed in empirical data (e.g. ideological coherence).

An important problem with measuring the effect of social identity using observational data is that, in the real world, partners can be selected because of who they are, their preferences over policy or both. Using conventional approaches, it would be very difficult to disentangle this correlation and distinguish the ‘pure effect’ of identity. To do so, we use a laboratory experiment based on the Baron and Ferejohn (1989) bargaining model where participants are informed of their potential coalition partners’ gender, race, and political ideology. In this paradigm, an offer consists of a division of material benefits between the participants. Thus, we minimize any concerns about policy outputs of coalition bargaining. The information about group members’ characteristics has no practical relevance for the game.

Of course, students in a lab cannot be equated to professional politicians who make decisions as representatives of larger groups. However, political parties are not strictly outcome-

oriented black boxes either. Parties are formed by individuals, leaders, supporters, grass-roots campaigners, and donors, among others, all of whom can have personal biases. The experiment shows that, even in a stylized environment where choices do not have policy consequences or affect future political results, people express preferences for those that are ideologically closer to them. We argue that these concerns can also be relevant for party leaders, who must reckon with the preferences of their electorate, which may have strong partisanship and group-based emotions (cf. Green, Palmquist and Schickler, 2004; Iyengar, Sood and Lelkes, 2012; Lehrer, 2012). Politicians may, therefore, be forced to internalize their supporters' dislikes of other parties and groups, as forming alliances with ideologically opposing parties can have important electoral consequences. An example of this is the loss in support for the Liberal Democrats in Britain after the 2010-15 coalition government with the Conservatives.

The next section presents a short review of the literature on coalition building and social identity, followed by a description of the experimental design and hypotheses. We then briefly describe the data generated by the experiment before presenting and interpreting our results. We conclude by highlighting the implications of our results for coalition bargaining and by pointing to avenues for further research.

Literature and theory

According to social identity theory, a person's membership in a group is an important part of their personal identity (Tajfel et al., 1971; Tajfel and Turner, 1986; Akerlof and Kranton, 2010). They may then behave more altruistically towards, and preferentially associate with, in-group members (see Chen and Li, 2009; Akerlof and Kranton, 2010; Charness, Rigotti and Rustichini, 2007; Fershtman and Gneezy, 2001, among others), discriminate or punish out-group members (Chowdhury, Jeon and Ramalingam, 2016, among others). Political allegiance is itself a form of group identity (Campbell et al., 1960; Green, Palmquist and Schickler, 2004; Huddy and Bankert, 2017). Similarly, ethnic group membership often induces strong feelings of group identity.

Game theoretic models of coalition bargaining sometimes have difficulty explaining why

real world coalitions are ideologically connected (see Martin and Stevenson, 2001).² Office-seeking models typically predict minimal winning coalitions, i.e. coalitions that have just enough voting power to pass legislation. Thus, these models can predict partnerships between parties at different extremes of the ideological spectrum (Laver and Schofield, 1990).

To address this issue, policy-seeking models added a second ‘policy’ dimension to actors’ preferences. The earlier models in this tradition argued in favor of minimal-connected coalitions (Axelrod, 1970) or minimal-winning coalitions with the smallest ideological range (de Swann, 1973). Later models like Austen-Smith and Banks (1988) and Baron and Diermeier (2001) added institutional structure to the negotiation procedures. These assumptions lead to predictions of coalition formation between the largest party and the one with the smallest bargaining power (i.e. continuation value) that can form a winning coalition, with the caveat that “that party’s ideal point is not too distant from the formateur” (Baron and Diermeier, 2001, p.936).

There are two reasons that identity groups could matter in coalition formation. Firstly, if negotiating actors have preferences over government policy outputs, then groups may reflect these preferences (cf. Bandyopadhyay and Oak, 2008; Bassi, 2017). For example, in many countries, members of political parties have shared ideological positions on the left-right dimension. Ethnic group membership may also correlate with policy preferences if, say, groups have different income levels, or if groups living in different geographic areas want to tilt spending towards their homeland. These factors are already taken account of in models which incorporate a policy dimension.

A second reason is that actors may prefer to have others like themselves, or fellow members of their group, as coalition partners, irrespective of any policy outputs. Coalitions are formed by individuals and the groups they represent; as such, actors possess a social identity, that is, a sense of membership in a particular group (Akerlof and Kranton, 2000). Thus, coalition formation might be influenced by negotiators’ preferences for working with parties similar to their own, or their dislikes of those that are different. These preferences could explain coalition

²Good summaries on coalition building models can be found in Laver (1997), Bandyopadhyay and Chatterjee (2006) and Martin and Stevenson (2001).

formation among similar parties, even when those coalitions are more costly for the proposer in terms of office and policy concessions. Here, we do not model this possibility explicitly, but just take the first step of testing whether identity matters for coalition formation.

Theoretical and experimental research has found that social identity is relevant for individuals' decision making processes, including effects on preferences for social outcomes, policy and re-distribution (Chen and Li, 2009; Cohen, 2003; Akerlof and Kranton, 2000, 2010; Kranton et al., 2012), conflict, cooperation and punishment (Tajfel et al., 1971; Tajfel and Turner, 1986; Goette, Huffman and Meier, 2006; Chowdhury, Jeon and Ramalingam, 2016), as well as trust and discrimination (Charness, Rigotti and Rustichini, 2007; Fershtman and Gneezy, 2001; Hargreaves Heap and Zizzo, 2009; Lane, 2016; Daskalova, 2018). Our experimental design allows us to identify if social identity has an effect on coalition formation on its own, irrespective of a formateur's policy preference.

Experimental design

Our experiment is based on Baron and Ferejohn (1989), where n members of a legislature vote by majority rule on proposals to divide a fixed unit of income. In each period, one legislator is randomly selected to make a proposal. If a proposal is accepted, the game ends; if it is rejected, the pie is multiplied by a positive discount rate $\delta \leq 1$, and the game continues with a new round of proposals. In the version we used, each legislator was equally likely to be selected as a proposer. In the symmetric equilibrium, the proposer offers

$$\frac{\delta}{n}$$

to $(n - 1)/2$ group members, and keeps

$$1 - \frac{\delta(n - 1)}{2n}$$

to herself. The proposal is accepted by a majority, and the game ends in the first round.

Previous experiments using Baron and Ferejohn (1989) have provided important insights

on how rules and incentives alter coalition forming behavior (see McKelvey, 1991; Drouvelis, Montero and Sefton, 2010; Tsai, 2009; Fréchette, Kagel and Lehrer, 2003; Fréchette, Kagel and Morelli, 2005; Diermeier and Morton, 2005; Baranski, 2016). These studies tend to confirm the general intuitions of the theoretical model. However, experiments that omit any information about potential partners also produced a smaller than predicted proposer advantage and a substantive number of ‘Grand’ coalitions (i.e. those that include more than the minimum necessary number of coalition partners).³

Our implementation of the model followed the standard setup for experimental Baron-Ferejohn (BF) games. Experiments started with a short questionnaire on demographics and political identity. Participants then played ten rounds of a divide-the-dollar game in three-person groups (description below). After that, subjects played a one shot three-person dictator game (pie of £3.00), that was used to measure participants’ pro-social orientation.⁴ Finally, participants filled out a short survey regarding their experience in the experiment.

Each group was composed of three participants. Subjects were re-grouped in every period with players from their matching group (composed of six participants). Subjects were randomly assigned into each matching group.⁵ This design implied that decisions made in one period would not have an effect on the group in the next period, reducing concerns about the (‘policy’) outcomes of a participant’s offer.⁶

In the BF games, participants decided how to split £17.00 among the three group members (including themselves). There were ten negotiation periods, each of which was composed of a maximum of five rounds. In each round, all group members submitted an offer (a division of the £17.00 pie). One offer was randomly selected and presented to all group members, who then voted to accept or reject it. This feature allows us to record data on all participants’

³A relevant exception are Agranov and Tergiman (2014), who find a substantial proposer advantage when group members are allowed to communicate before forming a coalition.

⁴The structure of the dictator game is similar to the divide-the-dollar, with the exception that there is no voting, money is directly distributed according to the division defined by the subject.

⁵Subjects were informed that in each period, they would be rematched into a different group, but the size of the matching group was not mentioned.

⁶The experiment was coded using the `betr` package for R, (<https://github.com/hughjonesd/betr>). All code is available on request for replication.

offers in each round. If the offer was accepted, it was recorded as the result of the period, the period ended, and the next period began. If the offer was rejected, the next round began with the pie discounted by $\delta = 0.7$ (i.e. in each round $pie = 17.00 * \delta^{round-1}$). In each round participants were shown the exact size of the pie in pounds and pence.⁷ If the offer was rejected in the fifth round, every player in the group got zero and moved on to a new period. Groups were maintained fixed throughout the rounds. Subjects were informed of the results of the negotiation at the end of each round.

Participants were paid for the outcome of one randomly selected BF period, plus their earnings from the dictator game and a £2.50 show-up fee. Experiment instructions were read out loud (with printed and on-screen versions available), and questions were answered in private (details in online Appendix). There were no trial periods.

Experimental Treatment

To test the effect of social identity on participant's coalition-building decisions, we conducted a treatment where group composition is randomly assigned. Participants interact in three-member groups that vary in terms of the gender, race, and political self-placement of the members.⁸

Participants were informed of the gender, race, and ideological positions of their group members in the BF stages. The gender and race of the other participants was indicated to each participant through an on-screen avatar that matched the data they provided in the survey.⁹

⁷To make it easier for the participants, the discounted pies were rounded to the nearest ten pence and subjects were provided with pen, paper and a calculator.

⁸One could think of other group identities, such as religion or socio-economic status as potentially having an impact. In this design we have concentrated on gender, race and ideology, as they are groups for which there is strong evidence of group identification and have simple visual representations. Including other identities would imply cutting the sample substantially, adding small sample problems to the estimations (eg. too few 'non-christian' or 'No Religion' at the University of Essex.)

⁹The alternatives for gender were "Male" and "Female", for race were "White Caucasian", "Black", "Latin American" and "South Asian". Participants who indicated they were "Latin American" or "South Asian" both got the same 'brown' skinned avatar, as it was not possible to create specific avatars that were sufficiently different from each other to produce meaningful treatments. Other races were excluded from the sample by limiting the nationalities of the eligible participants from the subject pool. As a con-

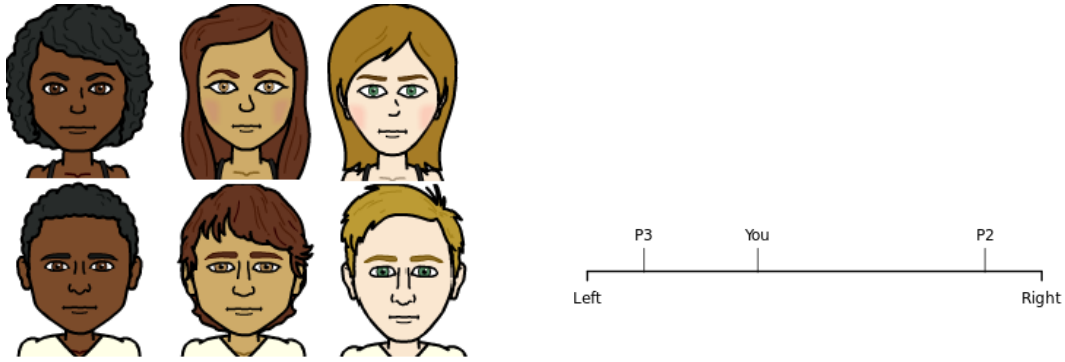


Figure 1: Avatar set and political self-placement scale presented to the treatment groups in the experiment. A screen-shot of the treatment is available in the online Appendix.

The ideological position of each group member was shown on a left-right scale (Fig. 1). The information was also taken from the survey, where subjects were asked to place themselves on an 11-point scale from 0 (left) to 10 (right). Participants were informed that the information they received during the experiment was true and accurate. Before the BF stages, subjects were shown the complete set of avatars (Fig. 1) and informed that each participant would be allocated one based on what they stated in the survey. In this treatment, the dictator game (after the BF stages) was included as a general measure of pro-social behavior. Therefore subjects played that stage without any information about the other participants.

The design and information provided to participants were selected in the interest of testing (social identity) factors that may influence an individual's coalition-building behavior, independent of policy or office concerns. Gender and race represent classic social identity traits that affect human behavior (Jenkins, 1996).

Ideological self-placement, on the other hand, is a prominent aspect of politics, yet, may have the advantage of a lower social-desirability bias, as people may be less ashamed to discriminate against political out-groups (e.g. Aneurin Bevan). Furthermore, by including information on all three characteristics, we avoid simply adding one obvious focal point and helps control, we also asked the subjects their nationality in the survey. Out of the 210 subjects in treatment groups, two indicated they had a nationality that was different from the list originally intended. Participants were also given an opportunity to provide comments about the experiment at the end, and there were no complaints about the avatar allocation. The survey and list of nationalities are included in the online Appendix.

in lowering demand effects.

Hypotheses

The theoretical predictions of the Baron and Ferejohn (1989) model indicate one would expect subjects to offer $3.966\bar{7} \approx 4.00$ pounds to one of the group members, nothing to the other and keep the rest. However, experimental research on this model suggests this result is unlikely and one should expect a smaller proposer advantage (see Fréchette, Kagel and Morelli, 2005; Diermeier and Morton, 2005). Regarding partner selection, pure rational choice perspectives predict coalitions between the formateurs and the weakest (a.k.a. cheapest) group member. However, in this experimental design, all group members have equal probabilities of being selected as formateurs and the same voting power, so one would expect partner selection to be random unless other non-economic factors mattered.

On the other hand, building on the literature on social identity and coalition building, we argue that social identity co-determines coalition formation, even if it plays no role in a game's payoff function. If this is the case, one would expect social identity concerns to alter coalition building behavior even in the absence of a policy dimension, justifying its inclusion in theories of coalition building. Given the experimental design and the social-identity information provided to participants, our hypotheses are as follows:

H1: The proposer will be more likely to coalesce with an in-group than an out-group member.

In our setup, this would imply that

H1a: Offers to same gender and/or race group members are higher than the offers made to group members of different gender and/or race.

H1b: Offers to same gender and/or race group members are more likely to be non-zero than offers made to group members of different gender and/or race.

H1c: Offers to other group members are higher when the ideological distance between the proposer and receiver is smaller.

- H1d: Offers to other group members are more likely to be positive (non-zero) when the ideological distance between the proposer and receiver is smaller.
- H2: The receiver of an offer will be more likely to coalesce with an in-group than an out-group proposer. In our setup, this would imply that
- H2a: Holding offers constant, group members will be more likely to accept offers from a proposer of the same gender/race.
- H2b: Holding offers constant, group members will be more likely to accept offers from proposers who are closer to them ideologically.
- H3: As a result, coalitions of those voting yes on a proposition will be more likely to be ideologically ‘connected’, and more likely to be composed of same-race and same-gender members, than would happen by chance.

Data

All experimental sessions were conducted in December 2014, February and May 2015. We ran ten treatment sessions. Each session consisted of 18 individuals (for more details see Tab. A.1 in online appendix). The participants were recruited from ESSEXLab subject pool members coming from stable democracies (identified by Polity IV measures (Marshall and Cole, 2014)) to ensure a meaningful understanding of a left-right ideological scale. Participation was also limited to subjects who had taken part in less than five experiments overall, none of which were bargaining experiments.¹⁰ Sessions lasted between 50-80 minutes. Subjects were paid a mean of £11.01, with a minimum of £4.00 and maximum of £17.40.¹¹ Participants were predominantly female (138, 66%) and white (150, 71%). Nevertheless, all of the combinations of gender and race were represented. Due to the small number of participants that were ‘Black’,

¹⁰East Asian nationalities were excluded from the sample as there are very few countries within the stable democracy category and, consequently, low numbers of subjects in the pool.

¹¹In sessions that lasted more than 70 minutes (three cases) subjects were paid an extra pound for their time.

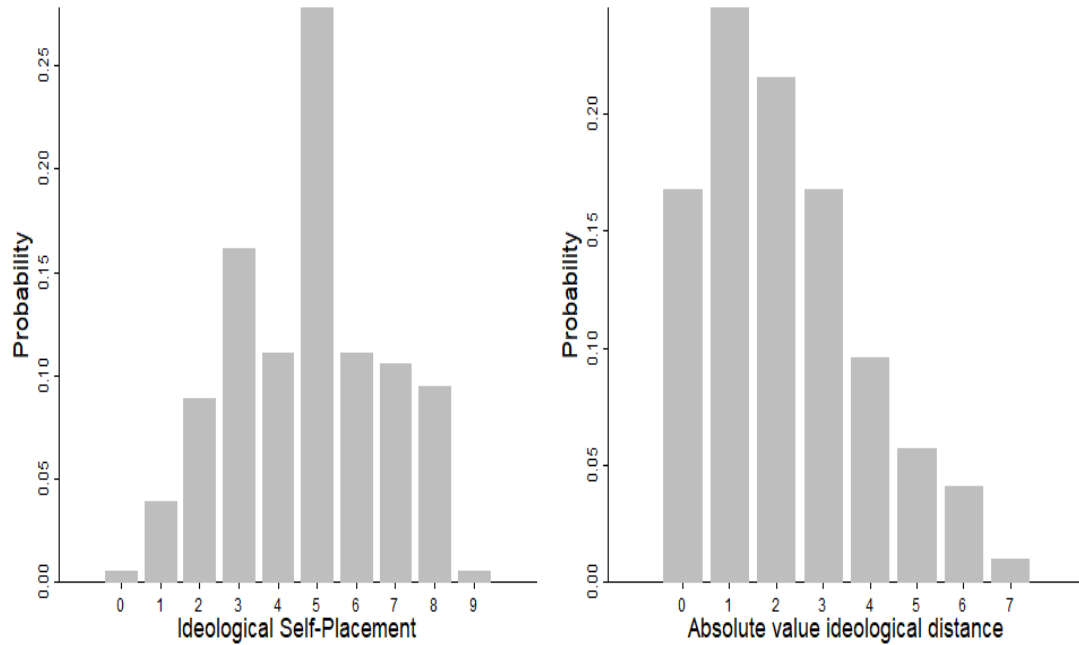


Figure 2: Self-placement and ideological distance. Left panel: Distribution of self-placement of participants on the ideological scale – 0 meaning extreme left and 10 extreme right (not observed). Right panel: Distribution of absolute differences in self-placements within participants-dyads.

‘Latin American’ or ‘South Asian’, we pool their races into a non-white ‘others’ category for the empirical analysis.¹²

Fig. 2 plots the distribution of ideological self-placement, as well as the distribution of distances between all pairs of participants who interacted with each other in the groups. Most participants located themselves in the center of the ideological spectrum.

Empirical analysis

To test the hypothesis that individuals offer more to (and are more likely to accept offers from) other group members that share their social identity. The identification of causal effects of social identity is based on the random assignment and re-matching of groups in each of the ten periods in the experimental session, eliminating any correlation between the social identity

¹²Empirical analyses using the disaggregated race categories produce the same substantive conclusions; however the small number of cases does not allow a reliable estimation of effects –results in Table A.6 online Appendix.

characteristics presented in the treatment and other factors. The only information provided to subjects was the gender, race, and ideological position of the other group members, variables that are accounted for in the empirical models presented below. Furthermore, as the participants negotiate over multiple periods, we obtain a panel of the subject's behavior as they interact with other group members with varying characteristics.

To analyze proposal behavior (H1a through H1d) we looked at first-round offers, of all participants, to each of the other group members.¹³ Fig. 3 shows the smallest and largest offers made by the proposer to the other two group members. As can be expected, given other experimental results, there are very few offers near the symmetric equilibrium (bin (4,0)) identified with the letters 'NE' on the graph. The largest amount of offers corresponds with a three-way equal split, at the (5.60 – 5.70, 5.60 – 5.70) intersection.¹⁴ There is also a substantial number of cases along the diagonal, where the proposer offers equal amounts to the other two group members, but keeps a larger portion of the pie for him/herself, and many cases of 'minimal coalitions' where one group-member is offered zero. In particular, many offers are between (7,0) and (9,0) corresponding to a roughly equal split between the proposer and one other group member.

The unit of analysis is the dyadic offer of each proposer to one of the other two group members (the amount kept by the proposer is excluded). Our independent variables are: 'Same Gender' and 'Same Race' dummies, indicating whether the receiver shares the same characteristics with the proposer. We also include the ideological distance between the proposer and receiver, denoted 'Ideo. Dist. P-R'. As control variables, we add the gender, race, and ideological self-placement of the proposer, as well as the similarities between the proposer and the third group member, the person excluded from a proposer-receiver dyad: 'Ideo. Dist. P-3rd', 'Same Gender P-3rd', 'Same Race P-3rd'. These latter variables account for strategic decisions made by the proposers when they are in the majority or minority condition in the group.

¹³This makes it easier to compare behavior across groups. Conclusions are substantively unchanged if we included all offers.

¹⁴ A proposal of £5.70, £5.70, £5.60, was the most equal possible split, as the minimum divisibility was in 10 pence.

	M1 Offer OLS	M2 Offer M2 OLS	M3 Offer OLS	M4 Partner Logit	M5 Vote Logit	M6 Vote Logit
Ideo. Dist. P-R	-0.13** (0.04)	-0.16** (0.05)	-0.16** (0.05)	-0.22** (0.07)	-0.15** (0.05)	-0.04 (0.07)
Same Gender	0.10 (0.13)	0.16 (0.14)	0.16 (0.13)	0.29* (0.15)	-0.02 (0.19)	-0.30 (0.28)
Same Race	-0.09 (0.12)	-0.14 (0.13)	-0.15 (0.13)	-0.27 (0.15)	0.18 (0.18)	0.20 (0.19)
Ideo. Dist. P-3rd		0.06* (0.03)	0.06* (0.03)	0.08 (0.04)		
Same Gender P-3rd		-0.13 (0.14)	-0.12 (0.12)	0.01 (0.19)		
Same Race P-3rd		0.12 (0.10)	0.10 (0.09)	0.20 (0.22)		
Self-Placement			-0.05* (0.02)	-0.04 (0.06)	-0.06 (0.04)	-0.08 (0.08)
Proposer-Male			-0.01 (0.11)	-0.79** (0.26)	0.05 (0.23)	-0.08 (0.37)
Proposer-White			0.06 (0.08)	-0.18 (0.26)	-0.25 (0.17)	-0.17 (0.33)
Amount Offered						1.00*** (0.12)
Intercept	5.13*** (0.15)	5.10*** (0.15)	5.29*** (0.17)	3.30*** (0.53)	1.49*** (0.33)	-3.02*** (0.75)
Num. obs.	3600	3600	3600	3600	1200	1200
R ²	0.01	0.01	0.01			
Adj. R ²	0.01	0.01	0.01			
L.R.	37.06	46.69	52.92	105.40	20.60	634.57
Pseudo R ²				0.07	0.02	0.58

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (Standard errors, clustered by matching group, in parentheses)

Table 1: Regression models on amount offered to other participant (Offer), whether a participant was chosen as coalition partner by giving more than zero (Partner), and whether a participant chose to accept the offer they received (Vote).

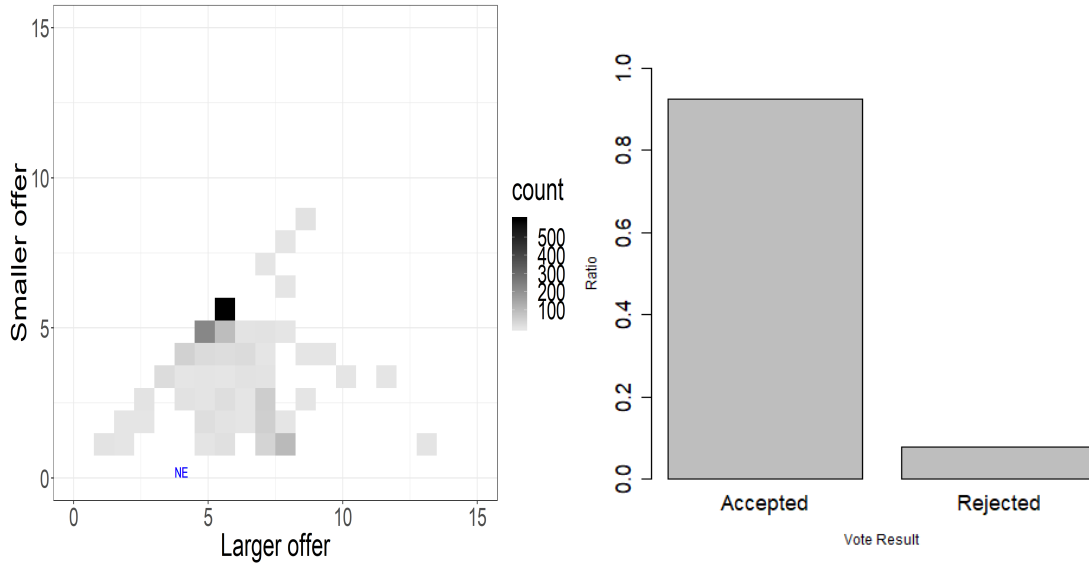


Figure 3: Distribution of offers and votes. Left panel: Joint distribution of largest and smallest offer made by the proposer to the other two group members. ‘NE’ indicates the Nash Equilibrium of the Baron-Ferejohn game. Right panel: Share of first round offers to the group that were accepted and rejected by a majority of group members. Of the total proposals, 7.66% were rejected, slightly more than the zero theoretically predicted.

For simplicity, the models M1-M3 present a linear regression of the amount offered to each group member.¹⁵ However, the results are robust to using fixed-effects panel estimations that account for all constant individual-specific characteristics that could be correlated with gender, race or ideological position (reference table in online Appendix A.3). In line with H1c, the models indicate a strong negative effect of ideological distance between proposer and receiver (‘Ideo. Dist. P-R’) on how much money the proposer offered. For every one-point increase in absolute ideological distance, proposers offered, on average, 13 pence less to a receiver, *ceteris paribus*. M1 shows the results without including any of the control variables, while M2 and M3 add controls for the characteristics of the third group member and the proposer, respectively. The strong negative effect of ideological distance is substantively unaltered. However, M2 and M3 also indicate that the amount offered to one group member depends on the ideological distance between the proposer and the third player (‘Ideo. Dist. P-3rd’); when the third person is further away the receiver is offered more, *ceteris paribus*.

¹⁵The models include the offers and votes for the first negotiation round, as these are comparable across groups. Including all rounds does not change the conclusions –results in online Appendix table A.7

Contrary to what we expected (H1a), the coefficients for ‘Same Gender’ and ‘Same Race’ are not statistically significant in the models. Neither are the coefficients for racial and gender similarities between the proposer and the third group member.¹⁶ One could argue that gender and race can only become salient when there are mixed groups, as in an all-white or all-female group, this element does not identify people of other types. However, the non-effects of gender and race persist even when controls for group composition are included (e.g. interactions with the standard deviation of self-placement, and interactions with gender and race diversity of groups –tables in online Appendix Table A.5).

One concern is that our results might be driven by right-wing subjects making more selfish or more unequal offers to all recipients irrespective of the other participants’ ideology. As their ideological distance to other group members in the center or left would be large by construction, a general preference for more unequal offers could correlate with ideological distance. However, the subjects’ ideological positions do not correlate with the inequality of their offers in treatment or Baseline sessions (correlation coefficients between 0.01 and 0.038 depending on the treatment). Furthermore, the probability of voting in favor of a proposal does not depend on the proposer’s ideological position, as one could expect if left-wing voters were more averse to inequality in offers (see ‘Self-Placement’ in M5-M6 discussed below).

We also ran analyses at the matching group level, since matching groups are independent observations. To do this, we estimated coefficients for M1 for each matching group separately. Figure 4 displays the coefficients for ‘Ideo. Dist. P-R’ for each individual matching group regression. The median of these is significantly less than zero (two-tailed Wilcoxon test, p-value 0.005).¹⁷

A different way of addressing H1, formulated in subhypotheses H1b and H1d, is by looking at the probability of offering more than zero to another group-member, as shown in model M4. In other words, the probability of including the other as a coalition partner. Results for the

¹⁶One concern could be multicollinearity among regressors, however, we do not find any evidence of this. The coefficients for ‘Same Gender’ and ‘Same Race’ are not even near standard levels of significance even when they are the only regressors included in the models – results in replication material

¹⁷Other robustness tests including bootstrapped coefficients, to deal with sample selection, and a comparison between the first five and last five periods, to account for possible learning effects, produced equivalent results that are presented in the online appendix.

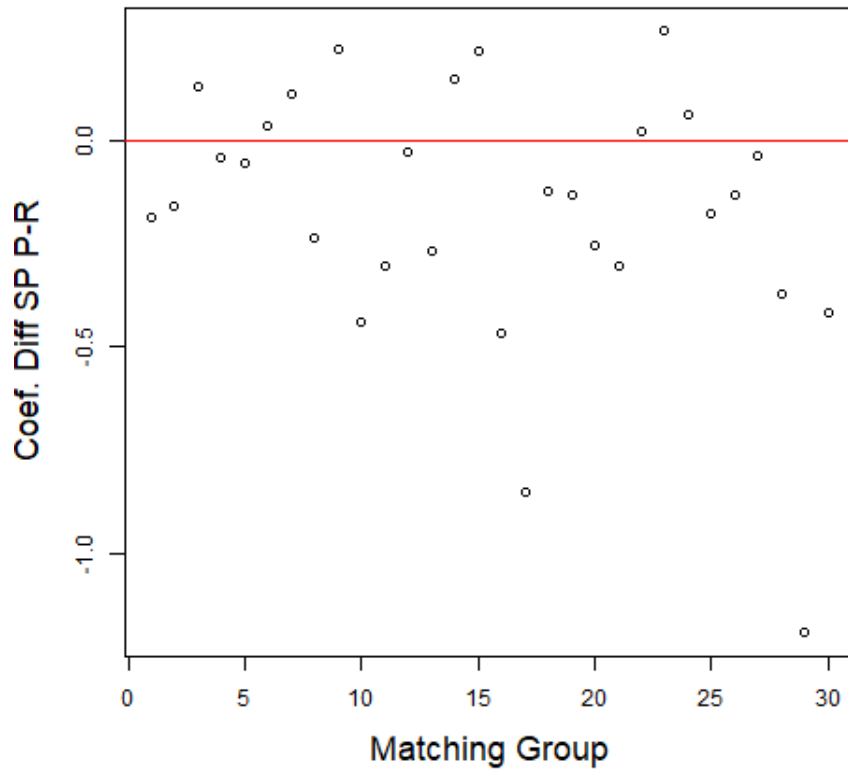


Figure 4: Coefficients for ‘Ideo. Dist. P-R’ from regressions of type M1 run separately within each of the 30 treatment matching groups.

likelihood of being a partner (i.e. being offered a non-zero amount) and the position of the third group member are similar to the previous models. ‘Same Gender’ appears to be significant and positively associated with being part of the coalition. However, this finding is not robust to all model specifications (see online Appendix).

A second aspect of the negotiation process is voting behavior. According to our hypothesis H2, we expected participants that were similar to the proposer to be more likely to vote in favor of a given offer. In contrast to proposal behavior, we can only evaluate the results for the proposal that was randomly selected and displayed to the group in each round, that is, one in every three offers (hence the smaller number of observations in the models). Fig 3 displays the share of first-round offers to the group that were accepted and rejected by a majority of group members. As can be seen, 7.66% of proposals were rejected, slightly more than the zero theoretically predicted.

For the empirical analysis of voting, we used logistic regression on the vote of each participant to accept or reject the offer they received. We exclude the proposer's vote from the analysis. Model M5 shows a significant effect of 'Ideo. Dist.-R', indicating that offers were more likely to be rejected by people that were ideologically further away from the proposer. However, this is probably caused by the lower offers to those people in the first place. Once we control for the amount offered (M6), social identity traits are no longer significant predictors of voting behavior. Thus, social identity has no independent effect on voting behavior, rejecting hypotheses H2a and H2b. Once again, when we include controls for individual-level characteristics using conditional logit models, the results are equivalent (table in online Appendix A.7).

Strategic concerns (e.g. coalition or reputation building) are unlikely to explain our results, since subjects were rematched after every period, and were not aware of the size of matching groups. Another possibility is that proposers simply use ideological closeness as a tie-breaking heuristic to select a coalition partner, and are really indifferent between the two alternative partners. This seems unlikely.¹⁸ For one, gender is an easier cue on which to coordinate as, in this experimental setting, there are only two alternatives to choose from. Second, if subjects were simply using ideological distance as a tie-breaker, then we would expect subjects always to offer the same amount to the ideologically closest recipient. In fact, they make higher offers as this recipient gets closer to them. Thus, ideological closeness appears to matter for itself and not just as a heuristic.¹⁹

The last analysis on the main treatment that we present here deals with the types of coalitions formed by those voting yes on a proposition.²⁰ According to H3, we expected that minimal winning coalitions (those where two out of three group-members voted in favor) would

¹⁸In a different variation of the experimental design we used colors green (2 participants) and purple (1 participants) to identify group members and measure if these random color allocations served as focal points for coalition formation. We did not find any evidence that participants used colors as a focal point for coalition formation.

¹⁹The online appendix presents the models that include a dummy variable for the coalition partner that is closest to the proposer; the ideological distance remains a significant predictor; however, the dummy is not, suggesting the distance itself is more important than simply who is closest.

²⁰An alternative measure of coalitions, defined by those receiving a non-zero offer, produce substantively the same results.

	Treatment			Baseline	
	Number	%	%	Number	%
Minimal-Connected	140	23.33	45.90		
Minimal-Disconnected	97	16.17	31.80	124	51.67
Minimal-Equal	68	11.33	22.30		
Grand	295	49.17	–	116	48.33

Table 2: Types of coalitions formed in Main treatment and Baseline samples.

be ideologically connected. Contrary to conventional theory, 49% of cases were ‘Grand’ coalitions, where all three participants accepted the offer (Tab. 2). This is reasonable considering the large number of three-way equal split offers (Fig. 3). Out of the minimal coalitions, 46% are ideologically ‘Connected’ and 32% ‘Disconnected’ (i.e. leap-frogged a member that was ideologically closer). In 22% of cases, the two other group-members were equally distant to the proposer: these cases are not informative since any possible coalition would be connected. There are no more connected coalitions than the $2/3$ we would expect by chance.²¹ This result is probably due to our small sample size; the evidence from the empirical models, particularly M4, suggests that people did try to form coalitions with the person closer to them.

Baseline behavior

Social identity can induce ‘in-group love’ – a motivation to help the in-group – or ‘out-group hate’ – a motivation to hurt the out-group – or both (Halevy, Bornstein and Sagiv, 2008; Halevy, Weisel and Bornstein, 2012; Yamagishi and Mifune, 2009, among others). To measure if this is the case in our set-up, we conducted four Baseline sessions in which participants went through the same experimental procedure as the main treatment without any information about whom they were interacting with. Each group member was randomly identified with a number from 1–3, which was reallocated in every period. These sessions provide a measure of people’s baseline offer and rejection behavior.

The comparison of offer and rejection behavior across the Main and Baseline sessions allows us to test for in-group love and out-group hate. If social identity information induced

²¹This figure comes from the fact that by chance $1/3$ of time, the proposer is in the middle, so all coalitions are connected; $2/3$ of the time, the proposer is extreme, so if proposals are random then half of them will be connected.

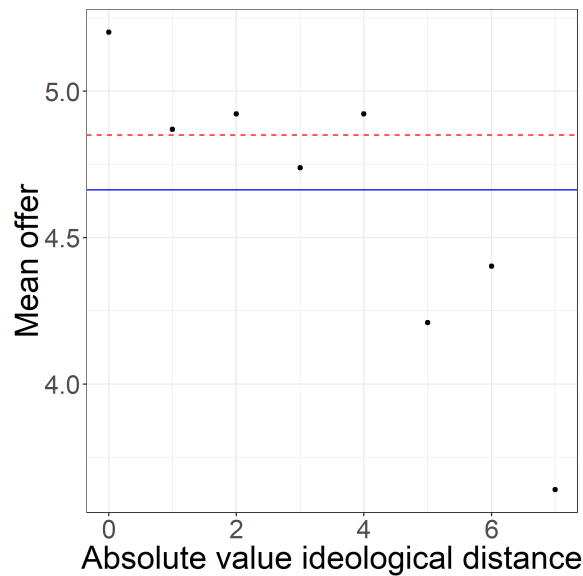


Figure 5: Mean offers to other group members by the absolute difference in ideological distance. The dots represent the mean offer at that ideological distance, the dashed red line is the overall mean offer in the main treatment and the blue line is the overall mean offer in the Baseline sessions.

in-group love one would expect the main treatment sessions to show higher mean offers than baseline sessions. Out-group hate, on the other hand, would be associated with substantively lower mean offers to out-group members in main than baseline sessions.

Figure 5 shows mean offers by absolute ideological distance. The red line represents the overall mean offer in the main treatment sessions and the blue line is the overall mean offer in the baseline sessions. The mean offer in the treatment sessions is not significantly higher (Main treatment 4.721, Baseline 4.663, p-value 0.413). Mean offers on the left hand side of the figure (lower ideological distance) are higher than the mean for baseline sessions, while offers on the right hand side are lower than the baseline mean. This suggests that results are driven by a mix of ‘in-group love’ and ‘out-group hate’.

The presence of in-group love and hate does not appear to alter coalition building behavior. The types of coalitions that are formed in the treatment and baseline session are equivalent, with 48% of Grand coalitions and the rest Minimal, suggesting the inclusion of social identity information did not alter the predisposition to form supra-majoritarian coalitions (Tab. 2).

Conclusions

In this paper, we tested for the effect of social identity on the selection of coalition partners. Our results show that participants systematically favor group members that are closer to them ideologically, offering them more and making them fewer zero offers. Thus, social identity can create coalitions of ideologically like-minded actors, even in the absence of a policy dimension. We suggest that this may also occur in coalition formation outside the laboratory, either when political actors themselves have a social identity, or when the social identity of their supporters constrains them.

We found no evidence for in-group bias based on race or gender. One reason could be that social desirability reduces the effect of these variables.²² In some countries' political coalitions do form based on ethnicity (Posner, 2004; Madrid, 2008). This may happen in contexts where racial and/or gender discrimination is more socially acceptable. Alternatively, ethnic coalitions may occur because, in these countries, ethnic patronage is a strategically important resource for winning elections. An interesting line of further research would be to conduct similar experiments in these countries.

In conclusion, our results show that preferences for similar coalition partners can help predict which coalitions form, even in the absence of policy concerns. This implies that coalition formateurs are not purely rational actors pursuing policy goals and/or the benefits of office. Rather, they also care about the identity of their partners, preferring others who are like themselves. Of course, ideologically connected coalitions may also form due to similar preferences over policy. We propose considering the potential impact of social identities as a complement to formal theoretical work, which can help to predict coalitions.

²²An alternative explanation is that participants do act on their prejudices but that contradictory prejudices cancel each other out. For instance, some participants may perceive women as frightful (implying higher discounting) and therefore give them less, while others may think that women are more altruistic. Hence, they give more to women expecting that they will require a fairer (that is higher) share.

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Online Appendix

Session Type	DG 1 period	BF 10 periods	DG 1 period	# Sessions	Total Indiv Obs	Participants per session	Total Part.
Main Treatment	–	BF + Soc. Id.	£3	10	30	18	180
Baseline	–	BF	£3	4	12	18	72
Total				16	47		282

Table A.1: Summary of experimental sessions: In the ‘Main Treatment’ participants played the BF game and were provided information on the gender, race and ideological position of the other players. In the ‘Baseline’ sessions participants played the BF game without receiving any information about the other players.

	Black	Latin American South Asian	White
Female	27	14	78
Male	12	3	46

Table A.2: Frequences of Gender and Race in Main treatment sample

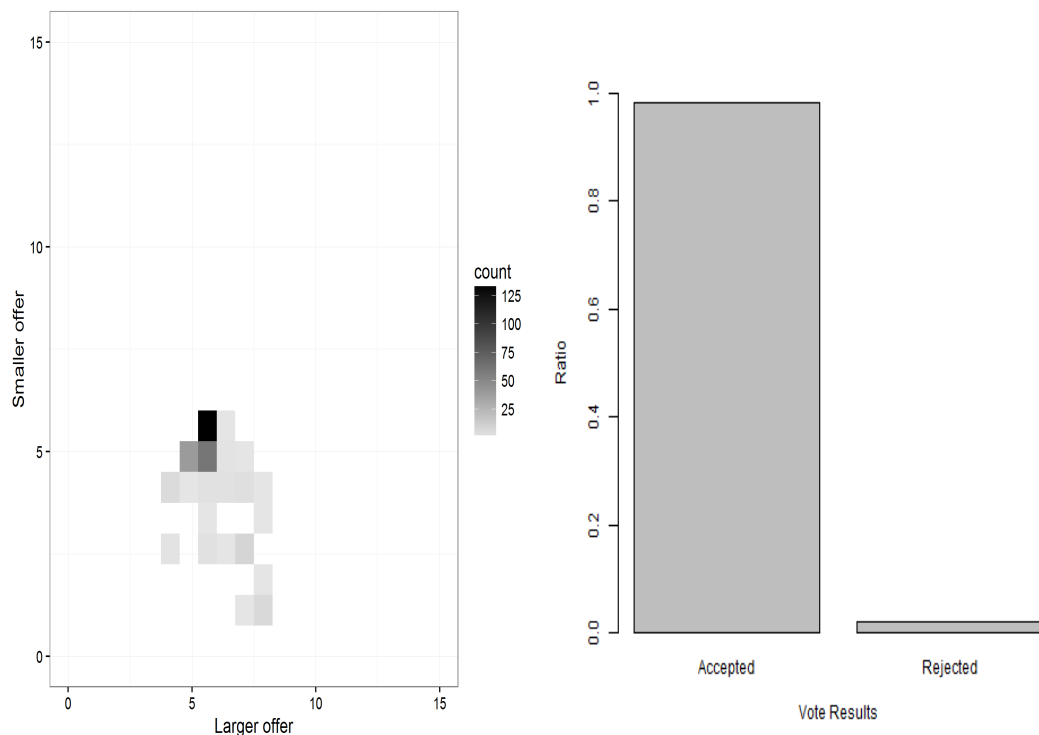


Figure A.6: Distribution of offers and votes for ‘2Dictator’ sample.

	M1 Offer FE	M2 Offer FE	M3 Partner C.logit	M4 Vote C.logit	M5 Vote C.logit
Ideo. Dist. P-R	−0.17*** (0.04)	−0.18*** (0.05)	−0.26*** (0.05)	−0.17*** (0.05)	0.01 (0.10)
Same Gender	0.20 (0.13)	0.22 (0.13)	0.31 (0.17)	−0.04 (0.18)	−0.37 (0.32)
Same Race	−0.18 (0.13)	−0.22 (0.14)	−0.33 (0.19)	0.16 (0.18)	−0.05 (0.31)
Ideo. Dist. P-3rd		0.05* (0.02)	0.10 (0.06)		
Same Gender P-3rd		−0.11 (0.06)	−0.07 (0.24)		
Same Race P-3rd		0.15* (0.08)	0.46* (0.23)		
Amount Offered					1.39*** (0.14)
AIC			1049.54	785.99	276.65
R ²			0.01	0.01	0.35
Max. R ²			0.26	0.48	0.48
Num. events			3291	837	837
Num. obs.			3600	1200	1200
Missings			0	0	0

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A.3: Fixed effects regression models on amount offered to other participant (Offer) and conditional logit models on whether a participant was chosen as coalition partner by giving more than zero (Partner), and whether a participant chose to accept the offer they received (Vote). The models include arellano-bond corrected standard errors

Robustness tests

	A.M5 Offer p0-5	A.M6 Offer p6-10	A.M7 Partner p0-5	A.M8 Partner p6-10	A.M9 Vote p0-5	A.M10 Vote p6-10
Intercept	5.33*** (0.20)	5.27*** (0.19)	3.63*** (0.66)	3.11*** (0.53)	-4.14*** (1.01)	-2.60*** (0.72)
Ideo. Dist. P-R	-0.11** (0.04)	-0.20*** (0.06)	-0.23** (0.08)	-0.23** (0.08)	-0.14 (0.08)	0.05 (0.09)
Same Gender	0.01 (0.11)	0.31 (0.20)	0.14 (0.19)	0.41* (0.16)	-0.34 (0.33)	-0.17 (0.34)
Same Race	-0.08 (0.14)	-0.23 (0.15)	-0.29 (0.27)	-0.28 (0.15)	-0.01 (0.23)	0.30 (0.25)
Ideo. Dist. P-3rd	0.04 (0.02)	0.09* (0.04)	0.02 (0.07)	0.12** (0.04)		
Same Gender P-3rd	0.00 (0.13)	-0.25 (0.15)	0.35 (0.24)	-0.19 (0.21)		
Same Race P-3rd	-0.05 (0.10)	0.23* (0.11)	-0.08 (0.30)	0.31 (0.23)		
Self-Placement	-0.03 (0.02)	-0.06* (0.03)	0.01 (0.08)	-0.06 (0.05)	-0.12 (0.12)	-0.06 (0.08)
Proposer-Male	0.01 (0.12)	-0.02 (0.12)	-0.81* (0.36)	-0.80** (0.26)	0.07 (0.47)	-0.08 (0.41)
Proposer-White	0.10 (0.08)	0.03 (0.09)	-0.00 (0.33)	-0.27 (0.25)	0.19 (0.38)	-0.56 (0.37)
Amount Offered					1.29*** (0.17)	0.87*** (0.10)
Num. obs.	1800	1800	1800	1800	600	600
R ²	0.01	0.02				
Adj. R ²	0.00	0.02				
L.R.	17.85	39.83	44.51	72.21	318.26	328.91
Pseudo R ²			0.07	0.08	0.60	0.59

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A.4: Regression models on amount offered to other participant (Offer), whether a participant was chosen as coalition partner by giving more than zero (Partner), and whether a participant chose to accept the offer they received (Vote). The table presents results for periods 0–5 and 6–10, to account for learning effects.

	A.M11 Offer Int group type	A.M12 Partner Int group type	A.M13 Vote Int group type
Intercept	5.08*** (0.36)	3.15*** (0.57)	−3.38*** (0.84)
Ideo. Dist. P-R	−0.16** (0.05)	−0.22** (0.07)	−0.03 (0.07)
Same Gender	0.51 (0.37)	0.32 (0.47)	−1.21 (0.76)
N.Female	0.12 (0.15)	0.02 (0.27)	−0.13 (0.34)
S.Gender x N.Female	−0.20 (0.17)	−0.02 (0.26)	0.49 (0.40)
Same Race	−0.04 (0.33)	−0.25 (0.58)	0.23 (0.55)
N. White	0.02 (0.14)	0.10 (0.32)	0.18 (0.22)
S.Race x N. White	−0.06 (0.16)	−0.03 (0.34)	−0.02 (0.30)
Ideo. Dist. P-3rd	0.07* (0.03)	0.08* (0.04)	
Same Gender P-3rd	−0.12 (0.12)	0.00 (0.19)	
Same Race P-3rd	0.11 (0.08)	0.18 (0.22)	
Self-Placement	−0.05* (0.02)	−0.04 (0.06)	−0.07 (0.08)
Proposer-Male	−0.09 (0.13)	−0.79** (0.27)	0.28 (0.39)
Proposer-White	0.09 (0.09)	−0.24 (0.18)	−0.29 (0.36)
Amount Offered			1.01*** (0.12)
Num. obs.	3600	3600	1200
R ²	0.02		
Adj. R ²	0.01		
L.R.	55.93	105.96	641.28
Pseudo R ²		0.07	0.59

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A.5: Regression models on amount offered to other participant (Offer), whether a participant was chosen as coalition partner by giving more than zero (Partner), and whether a participant chose to accept the offer they received (Vote). The table presents results of interactions between same gender and the number of women in a group and same race and a number of white participants in the group.

	A.M14 Offer	A.M15 Offer	A.M16 Offer	A. M17 Partner	A.M18 Vote	A.M19 Vote
Intercept	5.15*** (0.15)	5.11*** (0.16)	5.44*** (0.16)	3.78*** (0.67)	1.69*** (0.35)	-2.93*** (0.77)
Ideo. Dist. P-R	-0.13** (0.04)	-0.16** (0.05)	-0.15** (0.05)	-0.21** (0.06)	-0.14** (0.05)	-0.04 (0.07)
Same Gender	0.09 (0.13)	0.16 (0.14)	0.15 (0.13)	0.28 (0.16)	-0.02 (0.19)	-0.29 (0.28)
Same Race All	-0.14 (0.12)	-0.22 (0.13)	-0.25 (0.13)	-0.32* (0.15)	0.12 (0.21)	0.21 (0.19)
Ideo. Dist. P-3rd		0.07* (0.03)	0.07* (0.03)	0.10 (0.05)		
Same Gender P-3rd		-0.14 (0.14)	-0.13 (0.12)	-0.00 (0.19)		
Same Race P-3rd All		0.17 (0.12)	0.12 (0.11)	0.17 (0.25)		
Self-Placement			-0.04* (0.02)	-0.02 (0.06)	-0.05 (0.04)	-0.08 (0.08)
Proposer-Male			-0.03 (0.11)	-0.86** (0.28)	0.03 (0.23)	-0.09 (0.37)
Proposer-Brown			-0.54* (0.23)	-1.33* (0.64)	-0.62 (0.42)	-0.23 (0.65)
Proposer-White			-0.05 (0.10)	-0.68 (0.39)	-0.44* (0.22)	-0.26 (0.33)
Amount Offered						1.00*** (0.12)
Num. obs.	3600	3600	3600	3600	1200	1200
R ²	0.01	0.01	0.02			
Adj. R ²	0.01	0.01	0.02			
L.R.	39.14	50.40	70.49	135.36	26.51	635.21
Pseudo R ²				0.08	0.03	0.58

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A.6: Statistical models on proposal and voting behavior presented in table 2, but including a disaggregated race category.

	A.M20 Offer	A.M21 Offer	A.M22 Offer	A.M23 Partner	A.M24 Vote	A.M25 Vote
	Full	Full	Full	Full	Full	Full
Intercept	4.98*** (0.15)	4.93*** (0.16)	5.07*** (0.19)	3.26*** (0.54)	1.42*** (0.32)	-2.70*** (0.63)
Ideo. Dist. P-R	-0.14*** (0.04)	-0.17*** (0.05)	-0.17*** (0.05)	-0.22** (0.07)	-0.16*** (0.05)	-0.06 (0.06)
Same Gender	0.13 (0.14)	0.20 (0.14)	0.20 (0.14)	0.28 (0.15)	0.04 (0.17)	-0.28 (0.24)
Same Race	-0.07 (0.12)	-0.13 (0.12)	-0.14 (0.12)	-0.24 (0.14)	0.14 (0.17)	0.18 (0.17)
Ideo. Dist. P-3rd		0.07* (0.03)	0.07* (0.03)	0.10* (0.05)		
Same Gender P-3rd		-0.14 (0.13)	-0.14 (0.11)	0.01 (0.18)		
Same Race P-3rd		0.17 (0.10)	0.16 (0.09)	0.18 (0.23)		
Self-Placement			-0.03 (0.02)	-0.03 (0.06)	-0.05 (0.04)	-0.07 (0.07)
Proposer-Male			-0.01 (0.11)	-0.79** (0.25)	0.03 (0.22)	-0.12 (0.34)
Proposer-White			0.04 (0.08)	-0.24 (0.26)	-0.16 (0.18)	-0.09 (0.29)
Amount Offered						0.95*** (0.10)
Num. obs.	3900	3900	3900	3900	1300	1300
R ²	0.01	0.01	0.02			
Adj. R ²	0.01	0.01	0.01			
L.R.	43.84	57.08	60.89	113.08	23.77	676.72
Pseudo R ²				0.06	0.03	0.57

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table A.7: Models M1-6 in main text, but including all voting rounds.

Bootstrapped coefficients proposal behavior, model M3

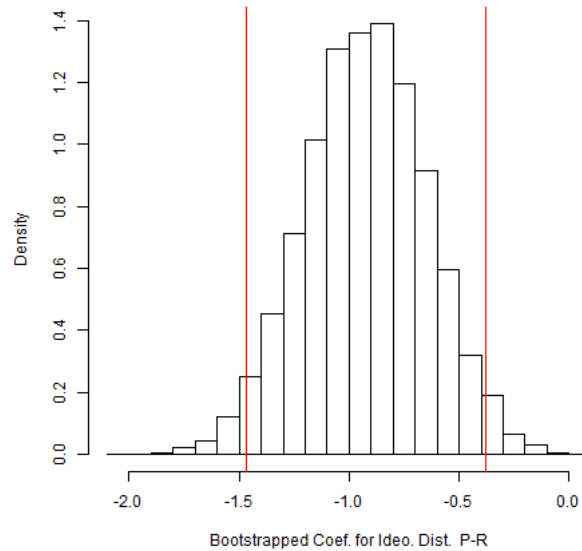


Figure A.7: M3 Bootstrapped coefficients of ‘Ideo. Dist. P-R’ for 10,000 iterations, red lines at ± 1.96 sd from the mean.

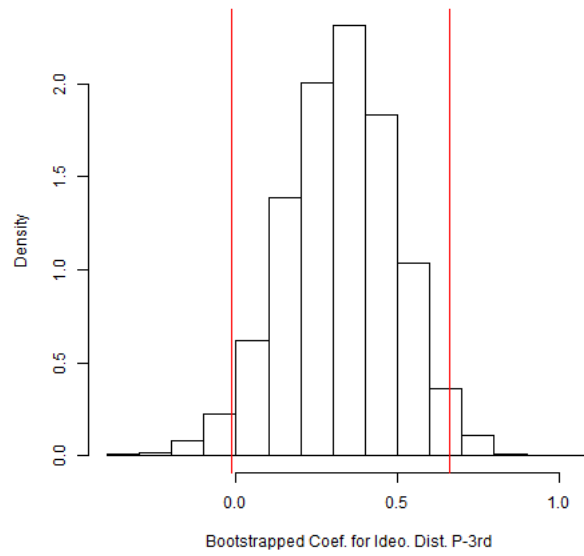


Figure A.8: M3 Bootstrapped coefficients of ‘Ideo. Dist. P-3rd’ for 10,000 iterations, red lines at ± 1.96 sd from the mean.

Bootstrapped coefficients partner selection, model M4

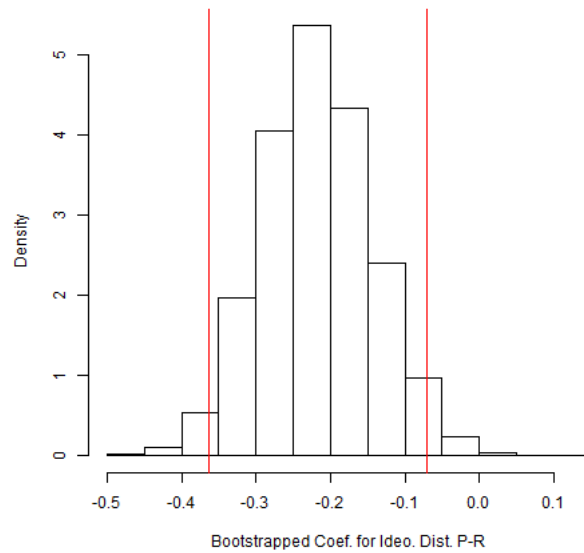


Figure A.9: M4 Bootstrapped coefficients of ‘Ideo. Dist. P-R’ for 10,000 iterations, red lines at ± 1.96 sd from the mean.

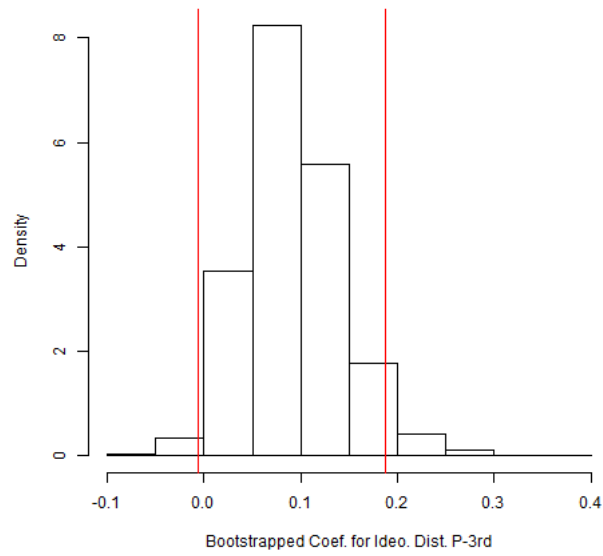


Figure A.10: M4 Bootstrapped coefficients of 'Ideo. Dist. P-3rd' for 10,000 iterations, red lines at ± 1.96 sd from the mean.

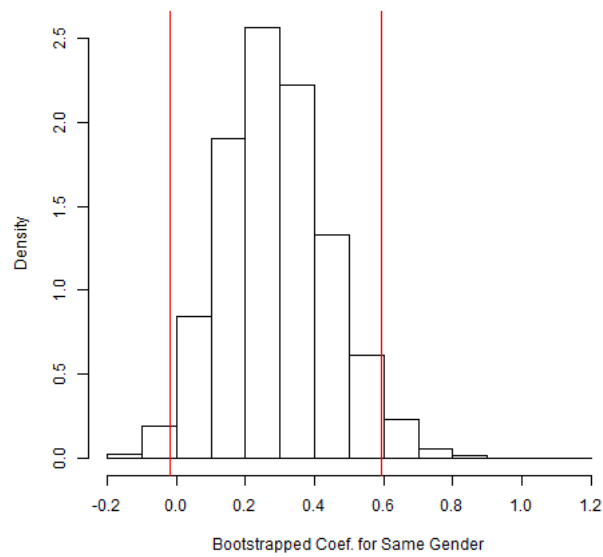


Figure A.11: M4 Bootstrapped coefficients of 'Same Gender' for 10,000 iterations, red lines at ± 1.96 sd from the mean.

Interaction with level of variation in the self-placement of group members

	A.M26	A.M27	A.M28	A.M29	A.M30	A.M31
	Offer Int.	Offer Int.	Offer Int.	Partner Int.	Vote Int.	Vote Int.
Intercept	4.91*** (0.21)	4.94*** (0.22)	5.11*** (0.25)	3.24*** (0.63)	1.52*** (0.45)	-2.77** (0.86)
Ideo. Dist. P-R	-0.21** (0.06)	-0.22*** (0.07)	-0.22** (0.07)	-0.26*** (0.07)	-0.17* (0.07)	-0.01 (0.09)
Same Gender	0.13 (0.26)	0.20 (0.26)	0.19 (0.26)	0.24 (0.48)	-0.16 (0.44)	-0.59 (0.61)
SD SP Group	0.23* (0.11)	0.21* (0.10)	0.20 (0.11)	0.09 (0.14)	0.02 (0.15)	-0.19 (0.21)
Same Race	-0.12 (0.12)	-0.15 (0.13)	-0.16 (0.13)	-0.27 (0.15)	0.17 (0.18)	0.21 (0.20)
Same Gender * SD SP Group	-0.01 (0.12)	-0.01 (0.12)	-0.01 (0.12)	0.03 (0.22)	0.08 (0.18)	0.17 (0.25)
Ideo. Dist. P-3rd		0.04 (0.03)	0.04 (0.02)	0.08 (0.04)		
Same Gender P-3rd		-0.15 (0.13)	-0.14 (0.12)	-0.00 (0.19)		
Same Race P-3rd		0.09 (0.09)	0.08 (0.09)	0.19 (0.22)		
Self-Placement			-0.04 (0.02)	-0.04 (0.06)	-0.05 (0.04)	-0.08 (0.08)
Proposer-Male			-0.02 (0.11)	-0.80** (0.26)	0.04 (0.23)	-0.08 (0.38)
Proposer-White			0.06 (0.08)	-0.18 (0.27)	-0.25 (0.17)	-0.16 (0.33)
Amount Offered						1.00*** (0.12)
Num. obs.	3600	3600	3600	3600	1200	1200
R ²	0.01	0.02	0.02			
Adj. R ²	0.01	0.01	0.01			
L.R.	52.70	58.45	63.64	106.50	21.33	635.62
Pseudo R ²				0.07	0.02	0.58

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ All models include marching-group clustered s.e.

Table A.8: Statistical models on proposal and voting behaviour with interaction of Gender and Standard Deviation of Self-Placement in Groups.

	A.M32	A.M32	A.M34	A.M35	A.M36	A.M37
	Offer Int.	Offer Int.	Offer Int.	Partner Int.	Vote Int.	Vote Int.
Intercept	4.89*** (0.18)	4.92*** (0.21)	5.09*** (0.24)	3.09*** (0.59)	1.44*** (0.36)	-2.80*** (0.77)
Ideo. Dist. P-R	-0.21** (0.06)	-0.22*** (0.07)	-0.22** (0.07)	-0.26*** (0.07)	-0.17* (0.07)	-0.00 (0.09)
Same Gender	0.12 (0.13)	0.18 (0.14)	0.17 (0.13)	0.30* (0.15)	-0.02 (0.19)	-0.32 (0.29)
Same Race	-0.08 (0.23)	-0.11 (0.23)	-0.11 (0.22)	-0.07 (0.37)	0.14 (0.33)	-0.17 (0.36)
SD SP Group	0.24 (0.12)	0.22 (0.11)	0.21 (0.11)	0.17 (0.14)	0.05 (0.17)	-0.22 (0.19)
Same Race * SD SP Group	-0.02 (0.12)	-0.02 (0.12)	-0.03 (0.12)	-0.11 (0.18)	0.02 (0.20)	0.23 (0.21)
Ideo. Dist. P-3rd		0.04 (0.03)	0.04 (0.03)	0.08 (0.04)		
Same Gender P-3rd		-0.15 (0.14)	-0.14 (0.12)	-0.00 (0.19)		
Same Race P-3rd		0.09 (0.09)	0.08 (0.09)	0.19 (0.22)		
Self-Placement			-0.04 (0.02)	-0.04 (0.06)	-0.05 (0.04)	-0.07 (0.08)
Proposer-Male			-0.02 (0.11)	-0.79** (0.26)	0.05 (0.23)	-0.08 (0.38)
Proposer-White			0.06 (0.08)	-0.18 (0.26)	-0.25 (0.17)	-0.16 (0.33)
Amount Offered						1.00*** (0.12)
Num. obs.	3600	3600	3600	3600	1200	1200
R ²	0.01	0.02	0.02			
Adj. R ²	0.01	0.01	0.01			
L.R.	52.76	58.52	63.75	107.11	21.04	636.25
Pseudo R ²				0.07	0.02	0.58

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ All models include matching-group clustered s.e.

Table A.9: Statistical models on proposal and voting behaviour with interaction of Race and Standard Deviation of Self-Placement in Groups.

Experiment materials

This is negotiation period 2 and round 1


Split 17,00 pounds among the participants in your group. Type in the amount you would like to offer each participant, including yourself, in the boxes below.


You are participant 1


Offer to yourself:

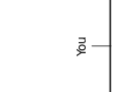
Offer to Participant 2:


Offer to Participant 3:


 Participant 3


 Participant 2

 You

 P2

 P3

 Left

 Right

betr

Figure A.12: Screen shot of treatment sessions.

Experimenter Instructions

On the day of the experiment

1. Open two screens of putty, one for the expt and another to watch the cpu (access it typing *top*)
2. Open each computer on the right kiosk mode
3. Adjust code to match the right number of people. **MAKE SURE YOU ARE USING THE RIGHT CODE**, $N = 18$, $T = 10$
4. Upload the code to putty and run it.

5. Make sure all the computers have

- * paper
- * pencil
- * calculator
- * instructions
- * consent form
- * information sheet
- * Receipt

Experimenter instructions

Bring to the lab:

1. Instructions, consent forms, info sheets, receipts, calculators.
2. Signed up subjects sheet

Come to the lab. Distribute consent forms/information sheets receipts and calculators to all seats. Open putty and winscp. `source(R script)` and `ready(expt)`. Then open Chrome Kiosk windows on computers 1-N. When everyone is seated `start(expt)`.

At experiment time

At the door ask “*Has everyone got university ID or another form of ID?*” Those who haven’t will only be used if we have insufficient of those who have; warn them, in future bring ID.

Randomize over subjects using the lab tokens (Sara knows where these are). Surplus subjects given £2.50 and sent off.

You need 18 participants. (The can only run using 18 participants, on the Factor Analysis won’t work and matching groups are of size 6). Only use the chrome kiosk pages for the 18 people

If you get number 1-18, come in and sit quietly at that desk. Please do not talk or communicate with other participants while you are in the room. Keep mobile phones and other communication devices silent, and do not use them while in the room. If you get a 13 or higher, wait outside.

Subjects 1-18 come in with ID checked at the door.

When everyone is seated, say

“Welcome to this experimental session.

Your behaviour in this experiment will be confidential. Data is collected based on your computer number, which was assigned randomly. Personally identifying information about you will never be linked to this computer number. At the end of the experiment, you will be paid privately, so that no other participants will know how much you have earned.

You may have heard about experiments in which participants were deceived. Experiments in [omitted for anonymity] never involve deception by the experimenters. That is, everything the experimenter tells you, and all on-screen instructions, are true and accurate. If you have any questions about this, please email [omitted for anonymity]

Fire exits are here and here [point them out]. Is there anyone who will have difficulty exiting the lab in an emergency? If so, please put your hand up.” [If so, ask if they have a Personal Emergency Plan; if they do not, use your judgement as to whether it is safe for them.]

“On your desk there is a consent form for this experiment, as well as an information sheet. There is also a receipt. At the end of the experiment you will be asked to fill it out with the

amount you have won, and return it with the signed consent form to the experimenter. You may keep the information sheet if you wish. Lastly there are experiment instructions and a number of blank papers for you to take notes on during the experiment.

I will now read out experiment instructions. At the end you will have an opportunity to ask questions. If at any time you have a question or a problem with your computer, please put your hand up, and an experimenter will help you privately.”

Start the corresponding treatment on putty using start(expt). The participants will see the instructions screen.

Read the instructions

When you finish reading the instructions, *“Once you finish reading the instructions please press the ‘Continue’ button to start the experiment”*

When the experiment is over:

“Please sign and date your receipts with the amount shown on your screen, and then click “Payment” on screen to show that you have done so.”

While this is happening prepare payment envelopes.

“The experiment is now over. I will come round to each of you in turn with your payment in an envelope. Check that you have received the correct payment. Note that amounts have been rounded to the nearest 10 pence. Please hand over your receipt and consent form when I do so. After you have received payment, please quietly leave the laboratory.”

“Please check the amount and if it’s wrong, raise your hand.”

Go round swapping envelopes for receipts. To each individual:

Email the results to me and store them safely somewhere, then delete them from the server.

Instructions

Welcome to the experiment.

During this experiment, please follow the instructions of the experimenters at all times. Please do not communicate with any other participants or anyone outside the lab, either directly or via mobile devices. If you do not follow these rules, you may be removed from the experiment without payment and you may not be allowed to participate in future experiments.

Please switch off your mobile phones and other electronic devices.

Once you have finished reading the instructions, please sign the **consent form** on your desk.

Experiment

The experiment starts with a short survey on general demographics and your views about some political topics. All the data that you enter are completely anonymous and no personal information will be recorded.

Later on, you will take part in a series of group decision-making periods in which each of you will propose how to divide £17.00 amongst the members of your group. Participants will be randomly allocated to groups of 3 by the computer. You will complete 10 periods and in each period you will be rematched into a different group. All of the interaction with your group will be conducted via your computer.

Each period will happen as follows:

1. In the **Proposal Stage** you will make an offer to each participant in your group. You can offer any quantity, by increments of 10 pence, to each player. The offers must add up to a 'pie' of £17.00.
2. Once all offers have been made, the computer will choose **one** of the proposals randomly and present it to all of the group members. If you **accept** the offer, then press the 'Accept' button. If you do not want to accept the offer, then **reject** it by pressing the 'Reject' button.

3. If more than half of the group members 'Accept' the offer it will be approved and each group member will be allocated that amount for the current period. If more than half of the group members 'Reject' the offer, it will be rejected by the group and all group members will be asked to propose a new division of the 'pie', but this time you will only have £11.90 to divide. Again, one proposal will be chosen randomly and presented to all group members. If the new proposal is rejected you will repeat the process, but the 'pie' will again be reduced, this time to £8.30. Each of these steps is called a 'round' and you can play up to 5 rounds per period, but in each round the 'pie' will get smaller. If the proposal is rejected in the fifth round, all group members will be allocated £0.00 for that period and you will all pass on to a new negotiation with a new group.
4. When you finish the 10 periods, you will be asked to complete a final decision making process. This time you will have to divide £3.00 amongst three group members and, in this section, whatever you allocate to each person is what they will get. In this section there will be **no voting**.
5. At the end of the experiment we will ask you to fill in a few questions regarding your experience in the lab. Once again, all the data that you enter are completely anonymous and no personal information will be recorded. After you finish the survey, a screen will appear indicating which period was chosen for payment and how much you will be paid.

Payment

In this experiment you will be paid according to the decisions that you have made. One of the ten negotiation periods will be chosen at random, and each will have a 1/10 chance of being chosen. You will also be paid for the decisions you make in the 'decision' section and a £2.50 show-up fee. At the end of the experiment you will be informed of how much you have earned in each section and your total payment.

Treatment Information - Provided after the survey

The information you have provided has been used to allocate each participant one of the following avatars.



There are only 6 avatars, so more than one participant will be allocated the same image, based on the race and gender each person stated in the survey.

The survey data has also been used to calculate a score that places each participant and their political views on the left right political spectrum.

Bargaining Experiment Survey

Survey Questions

Please answer the following questions. As indicated in the instructions, personal data will not be disclosed and all information you provide is anonymous.

- What year were you born?

- What gender do you identify with?

Male

Female

- What is your nationality? (*Drop-down menu with all countries accepted in the sample plus and 'other' option*)

- What race do you identify with? If you are mixed race, please state the one you feel closest to.

White Caucasian

Black

Latin American

South Asian

- Are you a student at the University of Essex?

Yes

No

- If Yes, are you an undergraduate or graduate student?

Undergraduate

Graduate

Does not apply

- If you are a student, in what academic year did you start your course/degree?

Academic Years

(Drop-down menu with a list of academic years)

- If you are a student, what is the name of your course/degree?

<i>Empty for participants to fill in</i>

———— Next Screen ————

Survey Questions Continued

Could you please state how strongly you agree or disagree with the following statements

- There is one law for the rich and one law for the poor.

Strongly Disagree

Strongly Agree

- There is no need for strong trade unions to protect employees' working conditions and wages.

Strongly Disagree

Strongly Agree

- Major public services and industries ought to be in state ownership.

Strongly Disagree

Strongly Agree

- Ordinary people get their fair share of the nation's wealth.

Strongly Disagree

Strongly Agree

- Government should reduce the taxes paid by higher-income citizens.

Strongly Disagree

Strongly Agree

- Same sex couples should enjoy the same rights as heterosexual couples to marry.

Strongly Disagree

Strongly Agree

- Women should be free to decide on matters of abortion.

Strongly Disagree

Strongly Agree

- The government should try to reduce the income differences between rich and poor citizens.

Strongly Disagree

Strongly Agree

- The UK should be allowed to set quotas on the number of EU immigrants entering the country.

Strongly Disagree

Strongly Agree

- Free market competition makes the health care system function better.

Strongly Disagree

Strongly Agree

- An Orange is orange.

Strongly Disagree

Strongly Agree

- Have you ever participated in any economics, government or psychology experimental studies before?

Yes


No

- Please specify the number of times. If you have not participated in any experiment please indicate it with a zero.

———— Next Screen ————

Survey Questions Continued

In politics people sometimes talk of 'left' and 'right'. Where would you place yourself on a scale from 0 to 10 where 0 means extreme left and 10 means extreme right?

Extreme Left 0  10 Extreme Right

You have selected:

———— At the End of the Experiment ————

Please take a few minutes and to answer the following questions

- From your experience, what did you think the experiment was about?

Empty for participants to fill in

- What was your overall impression of the experiment?

Empty for participants to fill in

Countries of origin

The sample was restricted to participants who were in the [omitted for anonymity] subject pool and stated their country of origin as one of the following 42: Albania, Argentina, Australia, Austria, Belgium, Botswana, Bulgaria, Canada, Chile, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Jamaica, Latvia, Lithuania, Luxembourg, Macedonia, Mauritius, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States, Uruguay. Checks were included in the experiment and only two participants in treatment sessions indicate they came from a country that was not in this original list.