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The Impact of Group Identity on Coalition Formation

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JEL classification codes

Keywords
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The Impact of Group Identity on Coalition Formation

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Bargaining and coalition building is a central part of modern politics. Typically, game-theoretic models cannot predict a unique equilibrium. One possibility is that coalitions are formed on the basis of social identity loyalty to a gender, ethnic or political in-group. We test the effect of gender, race and ideological distance on coalition formation in a majority-rule bargaining experiment. Despite the absence of any incentives to do so, we find that ideological distance significantly affects offers made to potential coalition partners. As a result, coalitions tend to be ideologically coherent, even though there is no ideological policy output. We conclude that social identity considerations can determine equilibria in coalition formation.

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Introduction

Coalitions are an integral part of modern politics. They play a fundamental role in government formation and legislation. Therefore, it is important to understand the process by which coalitions emerge. There is a large empirical and game theoretic literature on the topic. Typically, game-theoretic models cannot predict a unique equilibrium.

One factor that may help predict coalition formation is membership in predefined groups. In some countries, political coalitions and parties are formed on the basis of ethnicity (cf. Horowitz, 1993; Posner, 2004; Madrid, 2008). In others, parties are based on shared ideological positions. Empirically, coalitions in parliamentary democracies are less likely to form as the ideological distance between potential partners increases (Martin et al., 2001). Similarly, pre-election coalitions are more likely to form, and are more acceptable to voters if they include ideologically congruent parties (Golder, 2006; Gschwend and Hooghe, 2008).

There are two reasons that groups could matter in coalition formation. Firstly, if government outputs include policy decisions (as opposed to distributive benefits, a.k.a. the 'spoils of office'), and if negotiating actors have preferences over these policy outputs, then groups may reflect these preferences. 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. Some models of coalition bargaining incorporate policy preferences (see Axelrod, 1970; de Swann, 1973; Austen-Smith and Banks, 1988; Baron and Diermeier, 2001, among others). However, these 'policy-seeking' models can be complex, and make strong assumptions about the trustworthiness of negotiation results (cf. McKelvey and Schofield, 1986; Laver and Schofield, 1990; Laver and Budge, 1992; Laver, 1997; Bandyopadhyay and Chatterjee, 2006).

A second reason is that actors may simply prefer to have others like themselves, or fellow members of their group, as coalition partners, irrespective of any policy outputs.

According to social identity theory, a person's membership in a group may form an important part of their personal identity (Tajfel et al., 1971; Tajfel and Turner, 1986). They may then behave more altruistically towards, and preferentially associate with, in-group members (Chen and Li, 2009; Akerlof and Kranton, 2010; Charness et al., 2007; Fershtman and Gneezy, 2001, among others). Political allegiance is itself a form of group identity (Green et al., 2004). Similarly, ethnic group membership often induces strong feelings of group identity. As well as preferences for their own group, actors may have emotions about particular out-groups. Aneurin Bevan, the 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." Both in-group love and out-group hatred might affect coalition bargaining; if so, connected coalitions could form even when group membership does not correlate with preferences over policy.

One counter-argument is that professional politicians are pragmatic and outcome-oriented, with no social identity concerns. However, even if so, politicians must reckon with the preferences of their selectorate, which may have strong partisanship and group-based emotions(cf. Green et al., 2004; Iyengar et al., 2012; Lehrer, 2012, among many others). They may therefore be forced to internalize their supporters' dislikes of other parties and groups.

In observational data, it is hard to disentangle policy-based preferences and pure group identity concerns. To do so, we use a laboratory experiment, a standard divide-the-dollar majority bargaining game where policy is purely distributive (Baron and Ferejohn, 1989). In this paradigm, an offer simply consists of a division of material benefits between the participants. Thus, we remove or minimize any ideological dimension to coalition bargaining, allowing us to test for a 'pure effect' of group identity. Participants were informed of their potential coalition partners' gender, race and political ideology. Our results show that gender and race did not affect participants' decisions. By contrast, ideology had a strong effect. Participants offered less, and were less likely to offer any positive amount, to those who were more distant from them ideologically.

1 Literature: Coalition-Building and Social Identity

Coalition building behavior has been proficiently studied within the game theoretic literature. The number of models and relevant propositions is too large to do them justice in this instance, however, good summaries can be found in Laver (1997); Bandyopadhyay and Chatterjee (2006); Martin and Stevenson (2001). Broadly speaking there are two main strands in the literature: one that only includes 'office-seeking' incentives (von Neumann and Morgenstern, 1953; Riker, 1962; Baron and Ferejohn, 1989, among many others) and another that adds 'policy-seeking' benefits to the utility calculation (see Axelrod, 1970; de Swann, 1973; Baron and Diermeier, 2001, among many others). (Both perspectives include cooperative and non-cooperative game theoretic approaches).

Office-seeking models typically predict some form of minimal winning coalitions (i.e. coalitions that have just enough voting power to pass legislation). These models, though better than random, have not performed well empirically (Laver and Schofield, 1990) and do not always yield unique predictions. For example, if many actors have equivalent voting power, then there are many possible minimal winning coalitions and any of these may emerge in equilibrium, including ones that consist of parties at different extremes of the policy space. Ideologically incoherent coalitions are, however, not regularly observed empirically (Martin and Stevenson, 2001).

Experimental research using office-seeking models of coalition building (e.g Baron and Ferejohn (1989); Gamson (1961)) have provided important insights on how institutional structures (i.e. 'the rules of the game') alter coalition formation behavior (see McKelvey, 1991; Drouvelis et al., 2010; Tsai, 2009; Fréchette et al., 2003, 2005; Tremewan, aper; Diermeier and Morton, 2005). Overall, experimental results tend to confirm the general intuitions of the institutional incentives; the importance of relative power of coalition partners with different voting weights; the (in)equality in division of spoils and duration of the negotiations caused by different approval rules (unanimity vs simple majority) and size of the discount factor. However, experimental results have 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). Equal distributions of the pie (or equal among 'coalition partners'), though not the majority of cases, are a fairly regular in experimental results (cf. Diermeier and Morton, 2005). Experience does plays a role in these results and actions tend to get closer to equilibrium predictions as participants have more experience with the game (Fréchette et al., 2005; Drouvelis et al., 2010).

Policy-seeking models, on the other hand, have substantially contributed to the discussion by adding a second 'policy' dimension to the utility calculations. 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). More recently Austen-Smith and Banks (1988) and Baron and Diermeier (2001) have updated these types of models to incorporate institutional structures to the negotiation procedures. However, in this process, they tend to make strong assumptions about the credibility of the coalition agreements and the possibility of separating office and policy benefits. These assumptions have led back to predictions of coalitions forming amongst the largest and the cheapest party, irrespective of the ideological distance between the partners.

Although policy concerns are realistic, we believe that the predictions of these models could be improved if they incorporated group-identity preferences into the calculations. By accounting for the cost of forming a coalition with a political party at a different extreme of the ideological spectrum, the models could better predict the types of coalitions observed empirically. An example of this type of adjustment can be found in Dickson and Scheve (2010), who incorporate social-identity into theoretical models of numbers of candidates.

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, 2010; Kranton et al., 2012), cooperation and punishment (Tajfel et al., 1971; Tajfel and Turner, 1986; Goette et al., 2006), as well as trust and discrimination (Charness et al., 2007; Fershtman

and Gneezy, 2001; Hargreaves Heap and Zizzo, 2009).

Studies of political parties and partisanship have also found in- and out-group biases (see Bartels, 2002; Green et al., 2004; Iyengar et al., 2012, among others). However, an important problem with measuring the effect of social identity is that expressed identities are created by group members in reaction to what they can *observe* about others and within existing political environments (cf. Michelitch, 2015; Posner, 2004; Jenkins, 1996). This makes it impossible to disentangle the effect of identity using conventional observational data approaches. In an experimental setting we can manipulate whether group-identity is available as a decision heuristic.[1]

2 Experimental Design

Our experiment, as much of the experimental literature on coalition-building, is based on the seminal Baron and Ferejohn (1989) model. In it, n members of a legislature vote by majority rule on proposals to divide a fixed unit of income. In each period, one legislator is 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 use, each legislator is equally likely to be selected as a proposer. In the natural, symmetric equilibrium focused on by Baron and Ferejohn (1989), 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.

Experiments started with a short questionnaire on demographics and political identity

[1] With the exception of Tremewan (aper), 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.

and then participants played a series of ten negotiation periods in which they decided how to split a £17.00 pie. Each negotiation group was composed of three participants. Subjects were re-grouped in every period with players from their matching group, in a stranger design.[2] The objective was to reduce any incentives for participants to choose partners of their same type and avoid any consequences of the outcomes of coalition formation for following periods. There was no manipulation of group composition, all variation was produced by random allocation of group members. The experiment was coded using the `betr` package for R (code available upon request).[3]

The experiment instructions were read out loud (with printed and on-screen versions available) and questions were answered in private. (Details in on-line appendix.) This process took no more than ten minutes. There were no trial periods.

In treatment sessions participants were informed of the gender, race, and ideological positions of their group members. The gender and race data was shown by giving each participant an on-screen avatar that matched the data they provided in the survey. Subjects were asked their race and gender. The alternatives for gender were "Male" and "Female", for race were "White Caucasian", "Black", "Latin American" and "South Asian".[4] After the survey, the participants 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. 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. 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

[2]Subjects were informed that in each period they would be rematched into a different group, but the size of the matching group was not mentioned. Instructions in on-line appendix.

[3]`betr` is an R package for conducting social science experiments (https://github.com/hughjonesd/betr). All code is available for replication.

[4]Other races were excluded from the sample by limiting the nationalities of the eligible participants from the subject pool. As a 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 wording of the survey can be found in the on-line appendix, as well as a list of all nationalities accepted in the sample.

on a scale from 0 (left) to 10 (right).[5]

The gender and race treatments were included because they represent classic social-identity traits. Also, there is observational evidence suggesting that for instance, in the United States, Women, Latino and African American legislators behave different from white males and have unequal probabilities of getting legislation approved (Barrett, 1997; Bratton, 2006). Ideological self-placement, on the other hand, is a prominent aspect of politics, yet, has the advantage of a lower social-desirability bias, as people are less ashamed to discriminate against political out-groups.

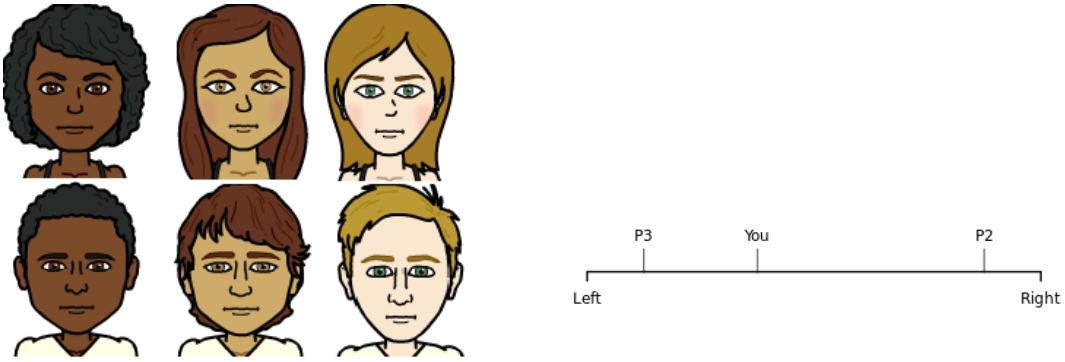

Figure 1: Avatar set and political self-placement scale as used in the experiment. A screen-shot of the treatment is available in the on-line appendix.

Each of the ten negotiation periods was composed of a maximum of five rounds. In each round all group members submitted a proposal (a division of the pie between the group). One proposal was randomly selected and presented to all group members, who then voted to accept or reject it. If the offer was accepted, it was recorded as the result of the round and participants went on to the next period. If it was rejected, members went on the next round (within the same period), and the pie was discounted by a factor of $\delta = 0.7$.[6] If the offer was rejected in the fifth round, every player in the group got zero and a new period began. We implement this design to make the delay in forming a coalition costly and because it is an integral part of the original Baron and Ferejohn (1989) model. Subjects were informed of the results at the end of each period. This

[5]Research by Kroh (2007) suggests that using an 11-point scale with natural mid-point is superior to other alternatives.

[6]To 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.

setup is similar to that used by Drouvelis et al. (2010) and allows us to collect data on all participants' proposals in each period.

After completing the negotiations we measured participants' pro-social orientation using a three-person dictator game where participants divided £3.00 between themselves and two other participants (without learning the others' race, gender or ideology). Finally, participants filled out a short survey and were privately paid for the outcome of one randomly selected negotiation period, plus their earnings from the dictator game and a £2.50 show-up fee. In baseline sessions, participants played the same game, but group members did not learn each others' race, gender or ideology. The data from these sessions is used to compare negotiation behavior across groups.

We also conducted a second treatment, equivalent to the one described above, but this time participants made decisions in two dictator games (one at the beginning and one at the end) with information about the other group members' race, gender and ideology. Henceforth this treatment is referred to as '2dictator'. For ease of understanding a longer description of this treatment is presented in the corresponding empirical section 5.1.

3 Hypotheses

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. Our hypotheses then are as follows:

H1 Offers to same gender and/or race group members will be higher than the offers made to group members of different gender and/or race.

H2 Offers to other group members will be higher when the ideological distance between the proposer and receiver is smaller.

H3 Holding offers constant, group members will be more likely to accept offers from a proposer of the same gender/race, and from proposers who are closer to them

ideologically.

H4 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.

4 Data

All experimental sessions were conducted at [omitted for anonymity] in December 2014, February and May 2015. We ran four baseline group sessions, ten main treatment group sessions and two sessions of the '2dictator' treatment. Each session consisted of 18 individuals.[7] The participants were recruited from the ESSEXLab subject pool, who declared their nationality to be of a stable democracy according to Polity IV measures (Marshall and Cole, 2014), and who had participated in less than five experiments, none of which were bargaining experiments.[8]

Session Type	# Sessions	Total Indiv Obs	Participants per session	Total Participants
Control	4	12	18	72
Main Treatment	10	30	18	180
2Dictador Treatment	2	5	12 & 18	30
Total	16	47		282

Table 1: Summary of Experimental Sessions

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.[9] Participants in treatment sessions 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', 'Latin American' or 'South Asian', we pool their races into a non-white 'others' category.[10]

[7] One of the 2dictator treatments was conducted with 12 participants due to low turnout

[8] East 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.

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

[10] Empirical analyses using the disaggregated race categories produce the same substantive conclusions, however the small number of cases does not allow a reliable estimation. Results in on-line appendix

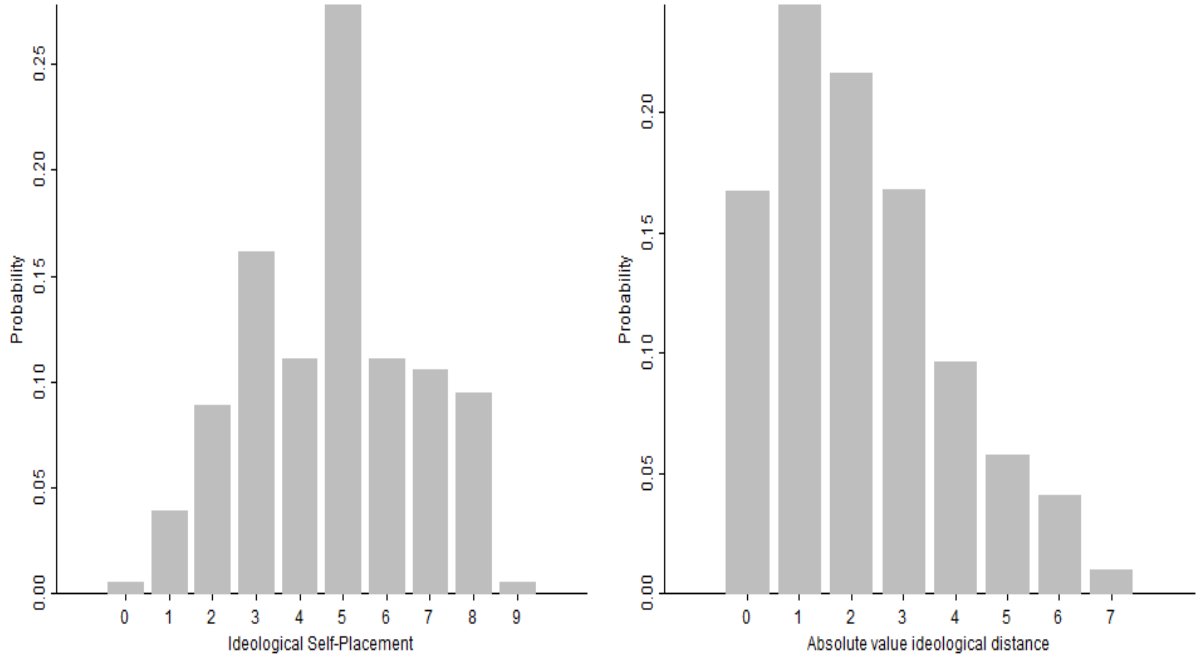

Figure 2: Self-placement and ideological distance in main treatment

Fig. 2 shows the distribution of ideological self-placement, as well as the distribution of distances between all pairs of participants who interacted with each other in main treatment groups. Most participants are in the center of the spectrum.[11]

5 Empirical Analysis

To analyze proposal behavior (H1 and H2) we looked at first round offers, of all participants, to each of the other group members in the main treatment sample.[12] 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 plot. The largest amount of offers corresponds with a three way equal split, at the $(5.50, 5.50)$ intersection.[13] There is also a substantial number of cases along the diagonal, where the proposer

[11] The 2dictator treatment presents similar patterns.

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

[13] A proposal of £5.70, £5.70, £5.60, was the most equal possible split, as the minimum divisibility was in 10 pence

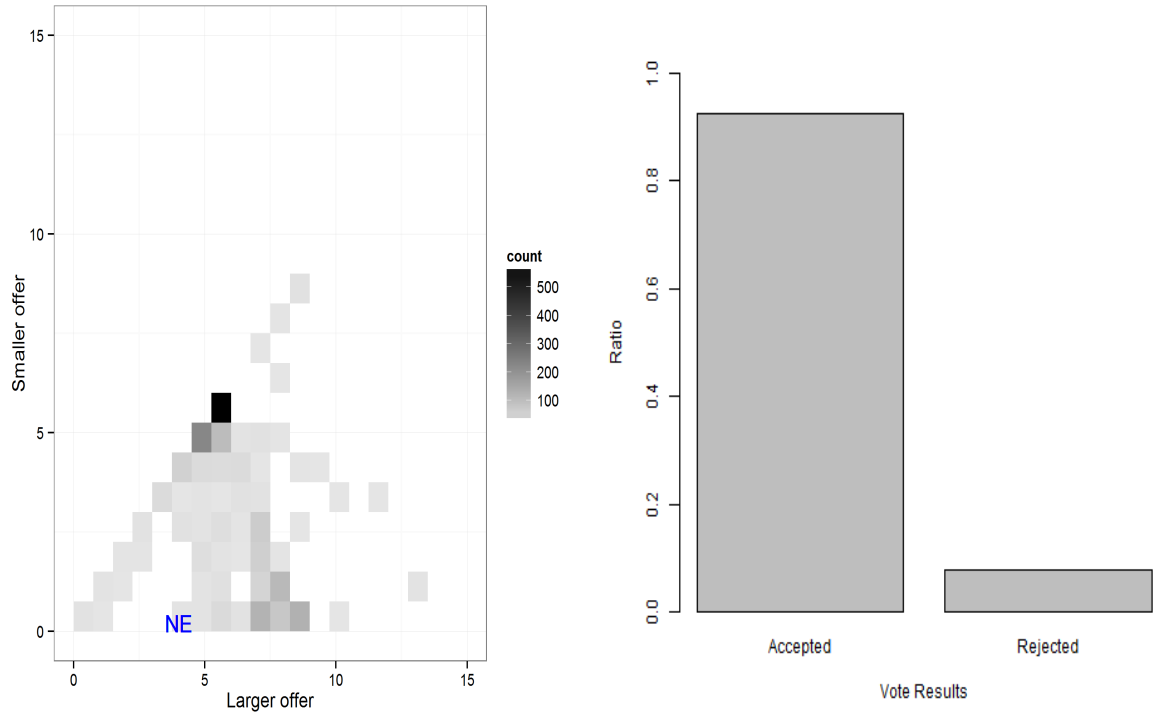

Figure 3: Distribution of offers and votes.

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 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 shared the same characteristics with the proposer. We also add the distance between the ideological self-placement of the proposer and receiver, denoted 'Diff SP P-R'. As control variables we include the gender, race and self-placement of the proposer, and the similarities between the proposer and the third group member,the person excluded from a proposer-receiver dyad: 'Diff SP 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 a majority or minority condition in the group.

Models M1-M3 present a linear analysis on the amount offered to each group mem-

	M1 Offer	M2 Offer	M3 Offer	M4 Partner	M5 Vote	M6 Vote
Intercept	5.13***	5.10***	5.29***	3.30***	1.49***	−3.02***
	(0.15)	(0.15)	(0.17)	(0.53)	(0.33)	(0.75)
Diff SP P-R	−0.13**	−0.16**	−0.16**	−0.22**	−0.15**	−0.04
	(0.04)	(0.05)	(0.05)	(0.07)	(0.05)	(0.07)
Same Gender	0.10	0.16	0.16	0.29*	−0.02	−0.30
	(0.13)	(0.14)	(0.13)	(0.15)	(0.19)	(0.28)
Same Race	−0.09	−0.14	−0.15	−0.27	0.18	0.20
	(0.12)	(0.13)	(0.13)	(0.15)	(0.18)	(0.19)
Diff SP P-3rd		0.06*	0.06*	0.08		
		(0.03)	(0.03)	(0.04)		
Same Gender P-3rd		−0.13	−0.12	0.01		
		(0.14)	(0.12)	(0.19)		
Same Race P-3rd		0.12	0.10	0.20		
		(0.10)	(0.09)	(0.22)		
Self-Placement			−0.05*	−0.04	−0.06	−0.08
			(0.02)	(0.06)	(0.04)	(0.08)
Proposer-Male			−0.01	−0.79**	0.05	−0.08
			(0.11)	(0.26)	(0.23)	(0.37)
Proposer-White			0.06	−0.18	−0.25	−0.17
			(0.08)	(0.26)	(0.17)	(0.33)
Amount Offered						1.00***
						(0.12)
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

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

Table 2: Statistical Models on Proposal and Voting Behaviour

ber. In line with H2, the models indicate a strong negative effect of proposer-receiver ideological distance ('Diff SP P-R') on how much money is 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 for 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 ('Diff SP P-3rd'); when the third person is further away the receiver is offered

more, *ceteris paribus*.[14]

Contrary to what we expected (H1), 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.

The significance of effects in M3 are robust to using fixed and random-effects panel estimations and bootstrapped coefficients (randomized over matching groups).[15] 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. Fig. 4 displays the coefficients for 'Diff SP 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).

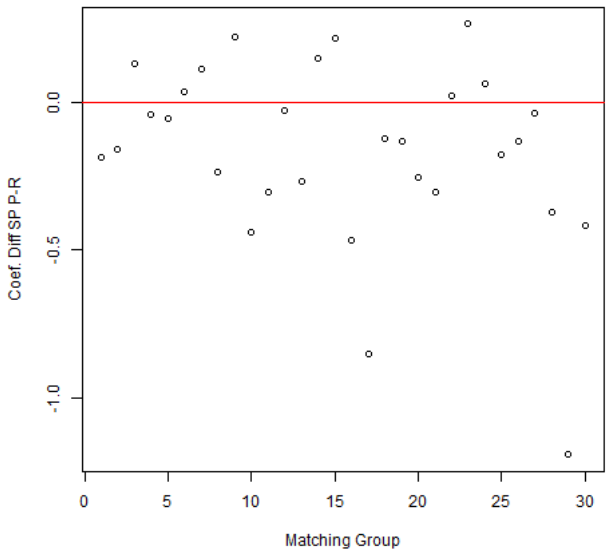

Figure 4: Coefficients for P-R Ideological Distance in matching group level regressions of M1

A different way of addressing H1 and H2 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 are similar to the

[14]To test for differences in behavior across genders, races and ideological positions we also interacted the effects of the proposer-receiver similarities with the proposer's characteristics, the results are not significant –on-line appendix.

[15]See on-line appendix.

previous models. The likelihood of being a partner, i.e. being offered a non-zero amount, decreases as the ideological distance to the proposer increases. The position of the third group member, only significant at the 90% confidence level (p-value 0.0515), has the same positive association as before, with higher distances to the third person increasing the likelihood of the receiver being included in a coalition. 'Same Gender' appears to be significant and positively associated with being part of the coalition, however, this is not robust to all model specifications (see on-line appendix). Race is not statistically significant.

A second aspect of the negotiation process is voting behavior. According to our hypothesis (H3), 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. Fig 3 displays the ratio 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 a logistic regression on the vote of each participant to accept or reject the offer they received. We exclude the proposer's own vote from the analysis. Model M5 shows a significant effect for 'Diff SP-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 behaviour, rejecting hypothesis H3.

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 ideology. However, subjects' ideological position does 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). Also, the probability of voting in favor does not depend on the proposer's ideological position (see 'Self-placement' in M5-M6). Therefore, we believe that proposers' ideology affects their offers via social identity, rather than via inequality concerns in general.

Strategic concerns (e.g. coalition- or reputation-building) are also 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. For one, gender is a 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 to always 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.

	Treatment			Control	
	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 3: Types of Coalitions in main Treatment and Control samples

A final analysis on the main treatment has to do with the types of coalitions formed by those voting yes on a proposition.An alternative measure of coalitions, defined by those receiving a non-zero offer, produce substantively the same results According to H4 we expected that minimal winning coalitions (those where two out of three group-members voted in favor) would be ideologically connected. Contrary to conventional theory, 49% of cases were 'Grand' coalitions, where all three participants accepted the offer (Tab. 3). 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. This result is probably due to our small N: the evidence from the empirical models, particularly M4, suggests that people did try to form coalitions with the closer person.

5.1 Comparison with Control and 2dictator treatments

When we compare the results of the treatment and baseline groups without information we do not find any strong differences. The types of coalitions that are formed are equivalent, with 52% of Grand coalitions and the rest Minimal. In terms of the inequality in the accepted offers, the mean is not significantly different across the two samples (p-value 0.126). The only significant difference is that in the baseline group, members were willing to tolerate higher variance in the inequality of offers and still vote in favor (variance test p-value 0.005). In other words, profit maximizing offers were accepted more often in the baseline sample. Overall behavior does not vary substantially across the baseline and main treatment samples.

Political scientists have been concerned that democratic politics can sometimes exacerbate intergroup tension (Posner, 2004). To explore whether majority bargaining can increase group identity concerns, the '2dictator' treatment added two dictator games, one before and another after the ten coalition-building periods. The dictator games had the same structure as the negotiation rounds but without voting: there was a £17.00 pie, all participants proposed a distribution, one was randomly selected as the 'offer' and displayed to the group and was automatically paid. Subjects were shown the avatars and ideological positions of the group-members. Instructions for the different games were provided right before the change to a different game occurred. One of the twelve periods (including the two dictator games) was randomly chosen for payment and subjects received a £5.00 show-up fee.

	M7 Offer	M8 DG-1	M9 DG-2
Intercept	5.52^{***}	4.85^{*}	4.57^{**}
	(0.19)	(2.08)	(1.49)
Diff SP P-R	-0.17^{**}	-0.14	-0.34
	(0.06)	(0.13)	(0.23)
Same Gender	0.00	0.01	1.53^{***}
	(0.05)	(0.19)	(0.42)
Diff SP P-3rd	0.11^{***}	-0.23	-0.31
	(0.03)	(0.15)	(0.20)
Same Gender P-3rd	0.00	0.16	$1.19^{\cdot}$
	(0.07)	(0.23)	(0.61)
Self-Placement	-0.01	0.05	-0.33
	(0.01)	(0.31)	(0.22)
Proposer-Male	-0.17	0.35	$-0.74^{\cdot}$
	(0.11)	(0.93)	(0.40)
Num. obs.	600	60	60
R^2	0.05	0.08	0.20
Adj. R^2	0.04	-0.02	0.11
L.R.	31.15	5.26	13.72

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\cdot}p < 0.1$

Table 4: Statistical models on 2dictator treatment

Overall, the behavior of participants in the coalition-building periods of the 2dictator and main treatment are similar (figures depicting offers and votes in On-line Appendix). Table 4 shows the results for the 2dictator treatment. Model M7 mirrors M3, but excludes the race variables as only four people in the 2dictator treatment were non-white and the estimation would be unreliable (this does not alter the conclusions). As can be observed, the same patterns appear, with a significant negative effect for ideological distance on the amount being offered and a positive effect of the distance to the third group member. Again, same gender is not a significant predictor of offers.

Table 4 also shows the results for the first and second dictator games, M8 and M9 respectively. Both are linear models on the amount given to other group members. The unit of analysis is dyadic, where one observation is the amount given to one of the two group-members. Again, participants' allocations to themselves were excluded. The logic in these decisions was different from the negotiation periods, as there was no voting. Proposers didn't have to give any amount away, but could choose to do so if they wanted.

In the first dictator game (M8) social identity traits do not predict giving behavior. In the second dictator game (M9), group-identity traits significantly predicted behavior. Subjects gave substantively more to group members of the same gender, significantly increasing the average payment to the receiver by £1.52 (and to the same gender third person by £1.00) in the second dictator game. Furthermore, the ideological distance between the proposer and receiver, indicates participants, on average, gave less to group members that were ideologically further away from them. These results are not significant at conventional levels, however, one can observe a substantive increase in the magnitude of the effect between the first and second dictator game. These results should be interpreted with caution as the number of observations is low and there are only five matching groups. However, they provide suggestive evidence that majoritarian bargaining situations can lead to increased group discrimination.

6 Conclusion

Coalition theories have a long history in political science. Yet, experimental research addressing the social dynamics involved in coalition building is still relatively scarce. 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 they are constrained by the social identity of their supporters.

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. In some countries' politics, 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.

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.

In the context of majoritarian coalition-building, small biases can lead to large intergroup differences, since a marginally less-preferred partner will be wholly excluded from the coalition. The evidence from our '2dictator' treatment suggests that this context can exacerbate group discrimination, perhaps by embittering intergroup relations. We see this as an important topic for future research.

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7 On-line Appendix

7.1 Data

Table 5: Frequences of Gender and Race in treatment sample

	Black	Latin American South Asian	White
female	27	14	78
male	12	3	46

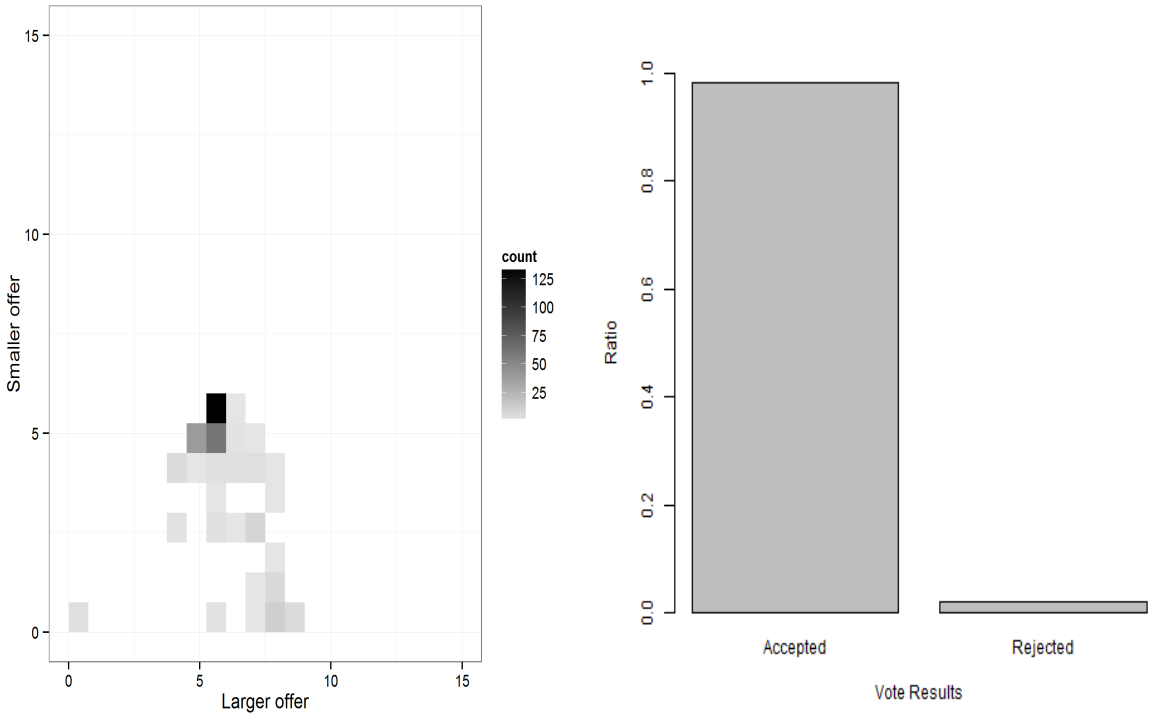


Figure 5: Distribution of offers and votes for 2dictator sample.

7.2 Robustness Tests

	RE	FE
Intercept	5.29^{***}	
	(0.19)	
Diff SP P-R	-0.17^{***}	-0.18^{***}
	(0.04)	(0.05)
Same Gender	0.19	0.22
	(0.12)	(0.13)
Same Race	-0.18	-0.22
	(0.13)	(0.14)
Diff SP P-3rd	0.06^{*}	0.05^{*}
	(0.03)	(0.02)
Same Gender P-3rd	-0.12	-0.11
	(0.08)	(0.06)
Same Race P-3rd	0.13	0.15^{*}
	(0.08)	(0.08)
Self-Placement	-0.05	
	(0.03)	
Proposer-Male	0.00	
	(0.11)	
Proposer-White	0.06	
	(0.12)	

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 6: Random and Fixed Effects Models with Arellano-Bond s.e.

	M1 Offer	M2 Offer	M3 Offer	M4 Partner	M5 Vote	M6 Vote
Intercept	5.15***	5.11***	5.44***	3.78***	1.69***	−2.93***
	(0.15)	(0.16)	(0.16)	(0.67)	(0.35)	(0.77)
Diff SP P-R	−0.13**	−0.16**	−0.15**	−0.21**	−0.14**	−0.04
	(0.04)	(0.05)	(0.05)	(0.06)	(0.05)	(0.07)
Same Gender	0.09	0.16	0.15	0.28	−0.02	−0.29
	(0.13)	(0.14)	(0.13)	(0.16)	(0.19)	(0.28)
Same Race All	−0.14	−0.22	−0.25	−0.32*	0.12	0.21
	(0.12)	(0.13)	(0.13)	(0.15)	(0.21)	(0.19)
Diff SP P-3rd		0.07*	0.07*	0.10		
		(0.03)	(0.03)	(0.05)		
Same Gender P-3rd		−0.14	−0.13	−0.00		
		(0.14)	(0.12)	(0.19)		
Same Race P-3rd All		0.17	0.12	0.17		
		(0.12)	(0.11)	(0.25)		
Self-Placement			−0.04*	−0.02	−0.05	−0.08
			(0.02)	(0.06)	(0.04)	(0.08)
Proposer-Male			−0.03	−0.86**	0.03	−0.09
			(0.11)	(0.28)	(0.23)	(0.37)
Proposer-LA or SA			−0.54*	−1.33*	−0.62	−0.23
			(0.23)	(0.64)	(0.42)	(0.65)
Proposer-White			−0.05	−0.68	−0.44*	−0.26
			(0.10)	(0.39)	(0.22)	(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

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

Table 7: Statistical Models on proposal and voting behavior using a disaggregated race category

7.2.1 Models including all the proposals in the data

	M1 Full Offer	M2 Full Offer	M3 Full Offer	M4 Full Partner	M5 Full Vote	M6 Full Vote
Intercept	4.98***	4.93***	5.07***	3.26***	1.42***	−2.70***
	(0.15)	(0.16)	(0.19)	(0.54)	(0.32)	(0.63)
Diff SP P-R	−0.14***	−0.17***	−0.17***	−0.22**	−0.16***	−0.06
	(0.04)	(0.05)	(0.05)	(0.07)	(0.05)	(0.06)
Same Gender	0.13	0.20	0.20	0.28	0.04	−0.28
	(0.14)	(0.14)	(0.14)	(0.15)	(0.17)	(0.24)
Same Race	−0.07	−0.13	−0.14	−0.24	0.14	0.18
	(0.12)	(0.12)	(0.12)	(0.14)	(0.17)	(0.17)
Diff SP P-3rd		0.07*	0.07*	0.10*		
		(0.03)	(0.03)	(0.05)		
Same Gender P-3rd		−0.14	−0.14	0.01		
		(0.13)	(0.11)	(0.18)		
Same Race P-3rd		0.17	0.16	0.18		
		(0.10)	(0.09)	(0.23)		
Self-Placement			−0.03	−0.03	−0.05	−0.07
			(0.02)	(0.06)	(0.04)	(0.07)
Proposer-Male			−0.01	−0.79**	0.03	−0.12
			(0.11)	(0.25)	(0.22)	(0.34)
Proposer-White			0.04	−0.24	−0.16	−0.09
			(0.08)	(0.26)	(0.18)	(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

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

Table 8: Models M1-M6 in main text, but including all rounds

7.2.2 Bootstrapped coefficients Proposal Behavior Model M3

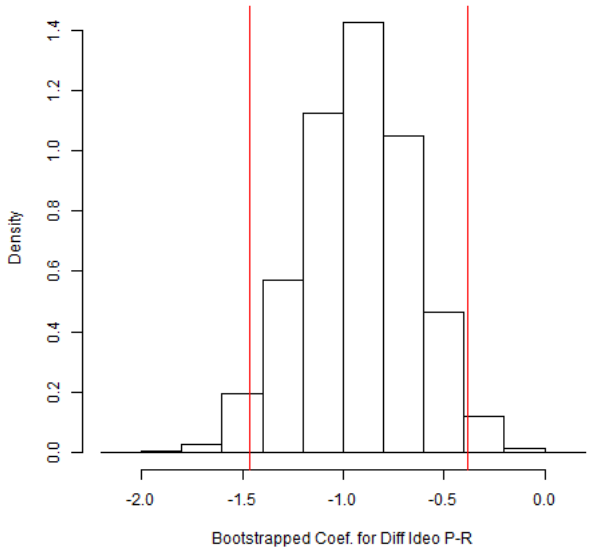


Figure 6: M3 Bootstrapped coefficients of 'Diff SP P-R' for 10000 iterations, red lines at ±1.96 sd from the mean

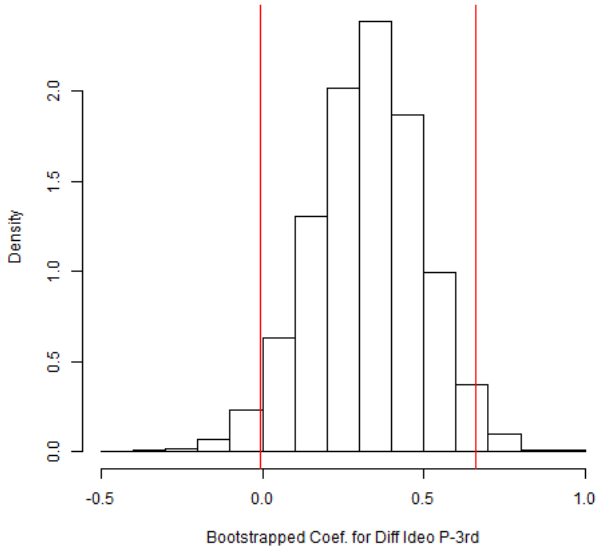


Figure 7: M3 Bootstrapped coefficients of 'Diff SP P-3rd' for 10000 iterations, red lines at ±1.96 sd from the mean

7.2.3 Bootstrapped coefficients Partner Selection Model M4

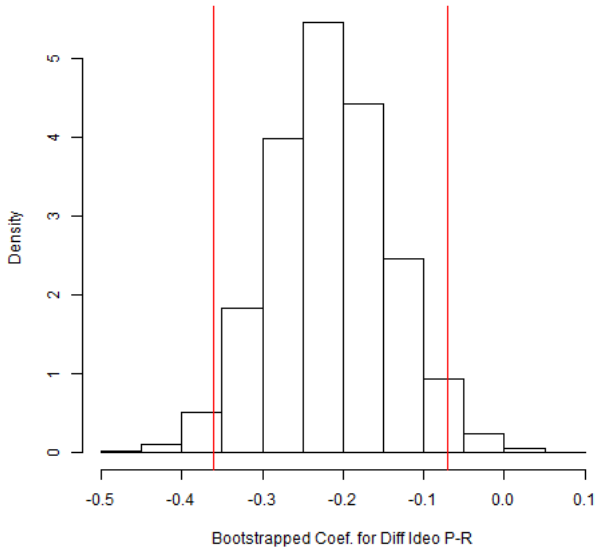


Figure 8: M4 Bootstrapped coefficients of 'Diff SP P-R' for 10000 iterations, red lines at ±1.96 sd from the mean

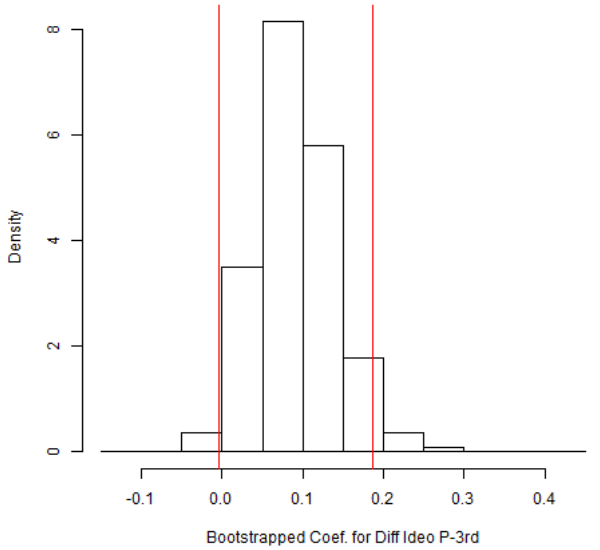


Figure 9: M4 Bootstrapped coefficients of 'Diff SP P-3rd' for 10000 iterations, red lines at ±1.96 sd from the mean

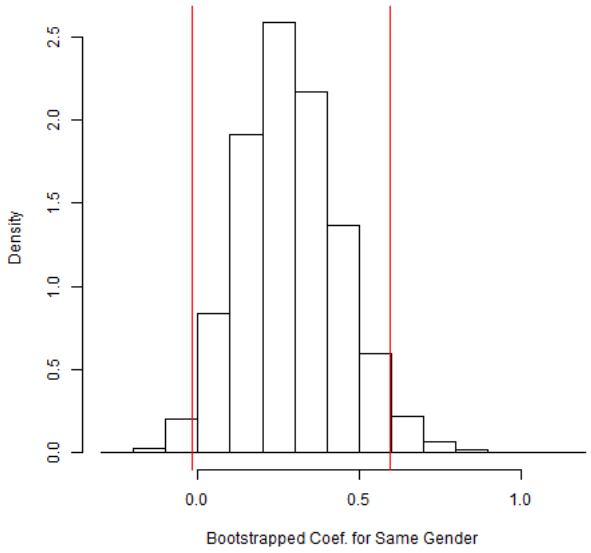


Figure 10: M4 Bootstrapped coefficients of 'Same Gender' for 10000 iterations, red lines at ±1.96 sd from the mean

7.2.4 Matching group level statistics

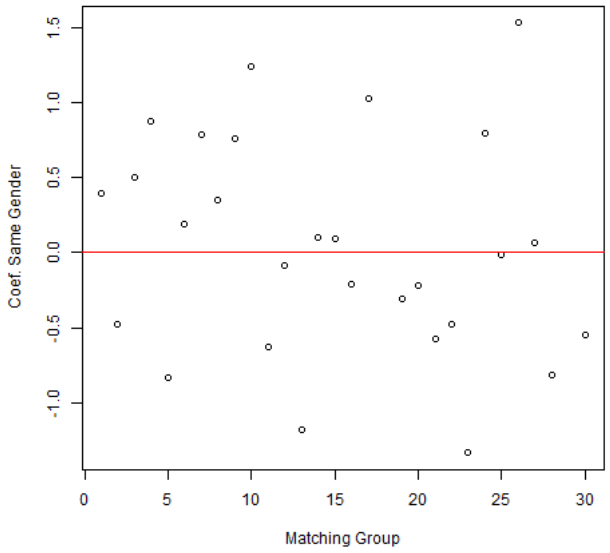


Figure 11: Coefficients for 'Same Gender' in matching group level regressions of model M1

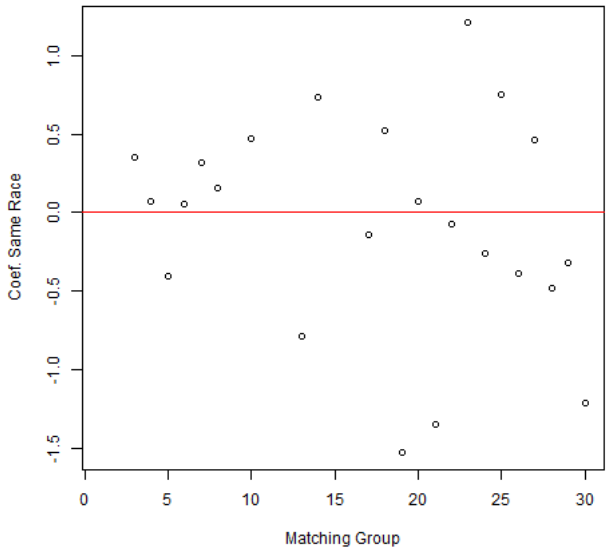


Figure 12: Coefficients for 'Same Race' in matching group level regressions of model M1

7.2.5 Interaction with level of variation in the Self-Placement of group members

	M1 Group SP*Gender	M2 Group SP*Gender	M3 Group SP*Gender	M4 Group SP*Gender	M5 Group SP*Gender	M6 Group SP*Gender
Intercept	4.91***	4.94***	5.11***	3.24***	1.52***	−2.77**
	(0.21)	(0.22)	(0.25)	(0.63)	(0.45)	(0.86)
Diff SP P-R	−0.21**	−0.22***	−0.22**	−0.26***	−0.17*	−0.01
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.09)
Same Gender	0.13	0.20	0.19	0.24	−0.16	−0.59
	(0.26)	(0.26)	(0.26)	(0.48)	(0.44)	(0.61)
SD SP Group	0.23*	0.21*	0.20	0.09	0.02	−0.19
	(0.11)	(0.10)	(0.11)	(0.14)	(0.15)	(0.21)
Same Race	−0.12	−0.15	−0.16	−0.27	0.17	0.21
	(0.12)	(0.13)	(0.13)	(0.15)	(0.18)	(0.20)
Same Gender * SD SP Group	−0.01	−0.01	−0.01	0.03	0.08	0.17
	(0.12)	(0.12)	(0.12)	(0.22)	(0.18)	(0.25)
Diff SP P-3rd		0.04	0.04	0.08		
		(0.03)	(0.02)	(0.04)		
Same Gender P-3rd		−0.15	−0.14	−0.00		
		(0.13)	(0.12)	(0.19)		
Same Race P-3rd		0.09	0.08	0.19		
		(0.09)	(0.09)	(0.22)		
Self-Placement			−0.04	−0.04	−0.05	−0.08
			(0.02)	(0.06)	(0.04)	(0.08)
Proposer-Male			−0.02	−0.80**	0.04	−0.08
			(0.11)	(0.26)	(0.23)	(0.38)
Proposer-White			0.06	−0.18	−0.25	−0.16
			(0.08)	(0.27)	(0.17)	(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 9: Statistical Models on Proposal and Voting Behaviour with interaction of Gender and Standard Deviation of Self-Placement in Groups

	M1 Group SP*Gender	M2 Group SP*Gender	M3 Group SP*Gender	M4 Group SP*Gender	M5 Group SP*Gender	M6 Group SP*Gender
Intercept	4.89***	4.92***	5.09***	3.09***	1.44***	−2.80***
	(0.18)	(0.21)	(0.24)	(0.59)	(0.36)	(0.77)
Diff SP P-R	−0.21**	−0.22***	−0.22**	−0.26***	−0.17*	−0.00
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.09)
Same Gender	0.12	0.18	0.17	0.30*	−0.02	−0.32
	(0.13)	(0.14)	(0.13)	(0.15)	(0.19)	(0.29)
Same Race	−0.08	−0.11	−0.11	−0.07	0.14	−0.17
	(0.23)	(0.23)	(0.22)	(0.37)	(0.33)	(0.36)
SD SP Group	0.24	0.22	0.21	0.17	0.05	−0.22
	(0.12)	(0.11)	(0.11)	(0.14)	(0.17)	(0.19)
Same Race * SD SP Group	−0.02	−0.02	−0.03	−0.11	0.02	0.23
	(0.12)	(0.12)	(0.12)	(0.18)	(0.20)	(0.21)
Diff SP P-3rd		0.04	0.04	0.08		
		(0.03)	(0.03)	(0.04)		
Same Gender P-3rd		−0.15	−0.14	−0.00		
		(0.14)	(0.12)	(0.19)		
Same Race P-3rd		0.09	0.08	0.19		
		(0.09)	(0.09)	(0.22)		
Self-Placement			−0.04	−0.04	−0.05	−0.07
			(0.02)	(0.06)	(0.04)	(0.08)
Proposer-Male			−0.02	−0.79**	0.05	−0.08
			(0.11)	(0.26)	(0.23)	(0.38)
Proposer-White			0.06	−0.18	−0.25	−0.16
			(0.08)	(0.26)	(0.17)	(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 marching-group clustered s.e.

Table 10: Statistical Models on Proposal and Voting Behaviour with interaction of Race and Standard Deviation of Self-Placement in Groups

7.3 Experiment materials

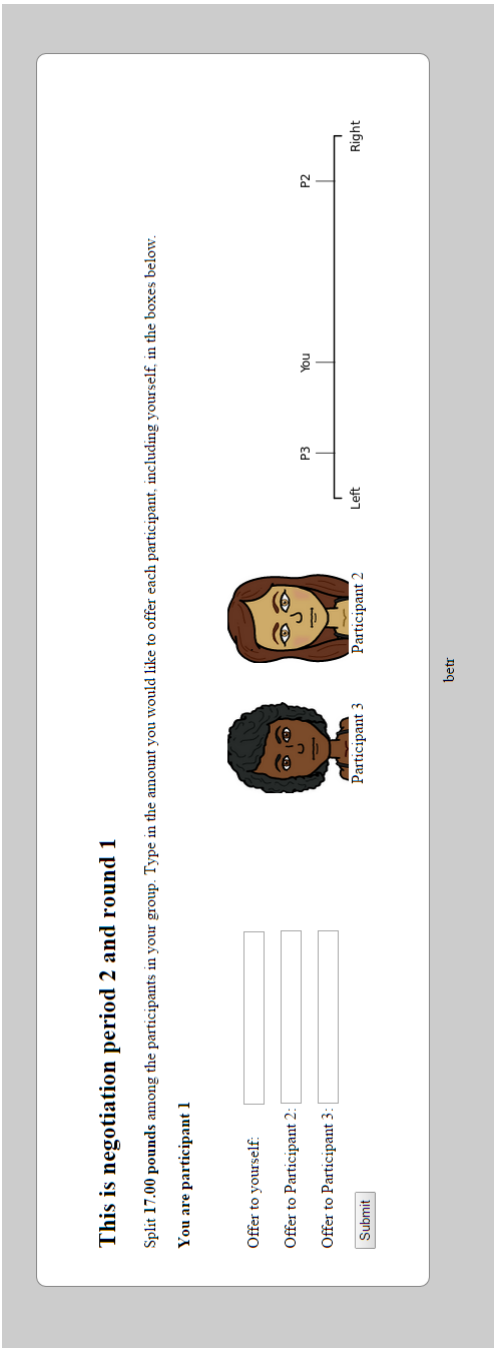


Figure 13: Screen shot of treatment sessions

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. Experi-

ments in ESSEXLab 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 essexlab@essex.ac.uk.

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.

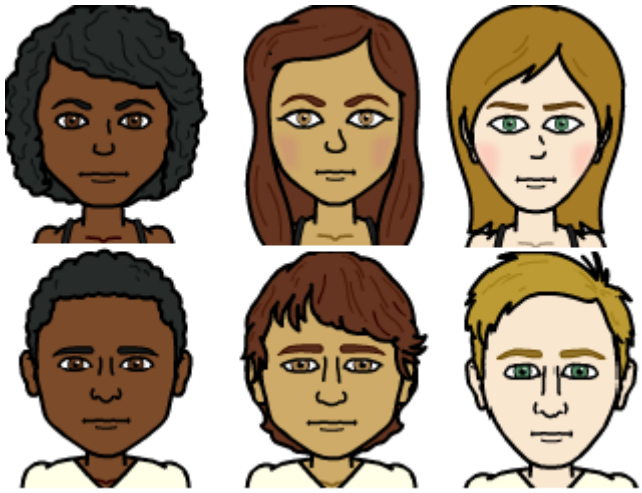
Payment

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? [Year]
- What gender do you identify with?

  Male

  Female

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

  Empty for participants to fill in

——— 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 Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

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

  Strongly Disagree Disagree

- An Orange is orange.

  Strongly Disagree Disagree

- 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. [number]

——— 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 [slider] 10 Extreme Right

You have selected: number 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

7.4 Countries of Origin

The sample was restricted to participants who were in the ESSEXLab 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.